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Relationship between Body Image Dissatisfaction and Fear of Fatness to Severity of Smoking Behavior in a Non-Clinical Adolescent Population

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THE RELATIONSHIP BETWEEN BODY IMAGE DISSATISFACTION AND FEAR OF FATNESS TO SEVERITY OF SMOKING BEHAVIOR IN A NON-CLINICAL ADOLESCENT POPULATION

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Dissertation Approval

This is to certify that the thesis presented to us by Louis Bevilacqua on the 9th day of May, 2000, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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DEDICATION

This completion of this dissertation would not have been possible if it were not for the support of several people. First, I would like to dedicate this work to my parents who have always supported me in pursuing my dreams. Secondly, it is dedicated to my daughters Rachael Marie and Amanda Leigh who have forgone many hours of time with me and have always welcomed me whenever I was available. Most importantly, I dedicate this to my best friend and wife, Debbie, who has been my guiding light and constant support. She has been there through it all, the times my computer would not work to the times I needed a proofreader. At times I believe she should also be awarded a doctorate given all that she has done.

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ABSTRACT

The Relationship Between Body Image Dissatisfaction and Fear of Fatness To Severity of Smoking Behavior in a Non-Clinical Adolescent Population

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Smoking is the most preventable cause of death in the U.S., yet it continues to kill more people than AIDS, automobile crashes, alcohol and drug abuse, murders, suicides, and fires---combined! In addition to a higher risk of dying prematurely, those who smoke are much more likely to experience numerous health problems. Other associated problems include dependency and tolerance to nicotine. Frequently, those who smoke are also more likely to use other substances such as marijuana, cocaine, heroine, and especially alcohol.

These findings are frightening considering that it is estimated that 4.5 million are adolescents. The reasons why adolescents smoke range from the influence of peers and

family members who smoke to the minimization that smoking is not that bad. Another possible reason to smoke is as a weight control strategy. This has been studied more in adult smokers than adolescents. As a result, the present study is an attempt to add to the literature on the relationship between fear of fatness and body image dissatisfaction and smoking.

The present study tested the following two hypotheses: 1.) Those who have a greater fear of fatness will be heavier smokers, and 2.) Those who have greater body image dissatisfaction will be heavier smokers.

A non-clinical sample of high school students from three different schools and two states (PA and New Jersey) was obtained. Self-report questionnaires and assessment inventories were administered. Results indicated that the majority of students have at least one parent (81%) and at least one friend (89%) who smokes. Most have tried to quit once. Twenty seven percent acknowledged that they have smoked to control their eating. This response item was significantly correlated with the total MAC score, the MAC Rigid Weight Subscale score, the Goldfarb Fear of Fat Scale and the Body Image Assessment score. Sixteen percent also indicated that they have smoked to control their

weight. This response item was correlated with the total MAC score, all three subscales of the MAC, the Goldfarb Fear of Fat Scale, and the Body Image Assessment discrepancy score. The Rigid Weight Subscale score of the MAC predicted number of cigarettes smoked per day. The Approval and Weight Subscale score of the MAC predicted the Fagerstrom score.

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INTRODUCTION

Smoking is believed to be responsible for over 400,000 deaths each year. Yet, smoking remains the most preventable cause of death in the U.S. today (U.S. Department of Health & Human Services USDHHS, 1994). In fact, each year, smoking kills more people than AIDS, alcohol, drug abuse, car crashes, murders, suicides, and fires--combined! On a national level, smoking accounts for more than 5 million years of potential life lost each year (USDHHS, 1996). Among the population of smokers, millions are adolescents (USDHHS, 1996). The earlier the age of initiation the more likely it is that they will continue to smoke as adults do (USDHHS, 1994). This is of great concern given the number of studies demonstrating the adverse effects that smoking cigarettes can have on a person's health.

HEALTH PROBLEMS LINKED TO SMOKING

Respiratory Problems

A primary health risk from smoking involves respiratory problems. Numerous studies involving thousands of children have provided consistent evidence of the relationship between smoking and the occurrence of cough and phlegm (USDHHS, 1994). Seely, Zuskin, and Bouhuys (1971) demonstrated that high school students with 1 to 5 years of smoking experience reported symptoms of excessive cough and shortness of breath. Another respiratory problem is that of lower lung functioning. Longitudinal studies have shown that smoking speeds up the decline of lung function with age (USDHHS, 1994). Sherrill et al. (1992) have described one measure of lung function obtained through spirometry as being the forced expiratory volume in one second (FEV1), that is, the volume of air blown out during the first second of the forced vital capacity maneuver. As the USDHHS (1994) has reported, FEV1 increases with the growth and development of a person's lung. During childhood, the ability to blow out air increases, especially during the adolescent growth spurt.

This ability begins to decline sometime during adulthood. When a person smokes, this ability is negatively affected. Tager, Segal, Speizer, and Weiss (1988) found that the normal adult rate of decline of FEV1 begins about two decades earlier in smokers relative to nonsmokers. Beck, Doyle, and Schachter (1982) conducted a longitudinal study to examine the growth and decay of lung functioning. Beck et al. also tracked particular respiratory symptoms such as usual cough, usual phlegm, recent wheeze, dyspnea, and chronic bronchitis as they related to sex, age, and smoking habits. Among smokers there was less growth and greater decline in lung functioning. In particular, they found impairment in lung functioning with smokers as young as 15 to 24 years of age. Within this 15 to 24 years of age group, there was not only impairment, but also a decline among females in lung function and growth. One of the earliest studies examining respiratory problems was by Haynes, Krstulovic, and Bell (1966). They examined respiratory illnesses in male adolescents and found that among smokers, respiratory illnesses were more common. Other health problems include emphysema, heart disease, stroke, and various cancers such as cancer of the larynx, pharynx, esophagus, lungs, pancreas, and mouth.

Dependency

In addition to the risk of respiratory problems is the risk of physical dependency that often develops from regular use. The USDHHS (1988) report described that nicotine dependence by smoking cigarettes is the most common form of addiction. Henningfield, Cohen, & Slade (1991) have indicated that tobacco use produces far more illness and death than any of the other addicting drugs combined. This is further supported by the USDHHS (1994) reports, which found that young smokers show signs of dependency and tolerance and are unable to abstain from nicotine use. Kelder, Perry, Klepp, and Lytle (1994) found that those students who were weekly smokers were unwilling or unable to give up cigarettes over the six years of follow up. Among the self-reported quitters, 13% to 46% returned to weekly smoking by the next year's measurement period. Henningfield, Clayton, and Pollin (1990) compared the common attributes of addictive drugs. In particular, they wanted to address the addictive attributes of nicotine. Their conclusion was that nicotine was as addictive as heroine, cocaine, and alcohol. This addictiveness or physical dependence is evident from the

withdrawal symptoms experienced. The extent of withdrawal symptoms from cigarette smoking is directly related to the previous level of nicotine intake. Some of the physical withdrawal symptoms include changes in body temperature, heart rate, digestion, muscle tone, and appetite. Some of the psychological symptoms include irritability, anxiety, sleep disturbances, nervousness, headaches, fatigue, nausea, and cravings for tobacco. These symptoms can last for days, weeks, months, and even years. McNeil, West, Jarvis, Jackson, and Bryant (1986) asked adolescents between the ages of 11 and 17 to complete a smoking questionnaire to assess withdrawal symptoms. Of the current smokers in their sample, 63% reported having one or more withdrawal effects when they had made attempts to quit. The most common withdrawal effect was a strong need to smoke, which is the most common effect reported frequently by adult smokers. People who have grown dependent on a substance, in general, have also developed a tolerance for that substance. This is also true with regard to nicotine.

Tolerance

Another side to this addictive cycle in smoking is the level of tolerance that an individual develops. Tolerance is evident when there is a need for an increase in the usual amount ingested in order to achieve the same effects achieved at former lower doses. Henningfield, Cohen, and Slade (1991) reported that the rate of graduation from occasional use to addictive levels of intake is highest for nicotine as compared to heroine, cocaine, and alcohol. One possible reason for this finding is the repeated and daily usage of cigarettes, which is not as common with other drug usage. With the repeated usage of any addictive drug, a person will develop a tolerance. So a person addicted to nicotine may need to increase the amount and/or frequency of smoking cigarettes to reach the same level of arousal and satisfaction. In addition, studies have also demonstrated that individuals who smoke cigarettes are more likely to be involved in other substance use (Kandel, & Yamaguchi, 1993; Bailey, 1992; Henningfield et al., 1990).

Comorbidity

The USDHHS (1988) reported that adolescents who smoke cigarettes are at an increased risk of using alcohol and illegal drugs. In fact, adolescents who have never smoked rarely report using illegal drugs (USDHHS, 1988). This is supported by the findings of Kandel and Yamaguchi (1993) who reported that early cigarette use was a predictive factor in the development of other drug use. While not all cigarette smokers use or abuse other drugs, Henningfield et al. (1990) found that current smokers between the ages of 12 and 17, were 3 times as likely to have used alcohol, 8 times as likely to have used marijuana, and 22 times more likely to have used cocaine in the last 30 days. Bailey (1992) provided further support for the relationship between tobacco use and other drug use in a longitudinal study of 4,192 students. Bailey (1992) surveyed students in grades 6 through 8 three times over a 4 year period. Students who progressed from low level usage of tobacco or alcohol to heavier usage were more likely to begin or increase their usage of other drugs as compared to those students who remained low level users of tobacco or alcohol. Similar patterns were found for both males and

females. Another risk factor associated with other substance use is age of onset of tobacco use. Clayton and Ritter (1985) found that not only was cigarette smoking, along with alcohol use, predictive of marijuana use, but that this effect was strongest when smoking was initiated by the age of 17. DiFranza and Guerrera (1990) estimated that the relative risk of developing alcoholism increased tenfold among cigarette smokers and that one-third of all cigarette smokers also heavily use alcohol.

The effects of smoking significantly impact today's youth. Certainly smoking cigarettes, which can lead to numerous physical ailments, addiction, as well as other substance use/abuse, is a problem, but just how much of a problem is it for young people?

ADOLESCENTS AND SMOKING

Prevalence of Smoking

From this brief overview, it is clear that smoking is negatively related to health in a variety of ways. So, how many adolescents are really affected? In the U.S., it is estimated that 4.5 million adolescents are current smokers (USDHHS, 1996). In a study conducted by the Substance Abuse and Mental Health Services Administration's 1994-1997 National Household Surveys on Drug Abuse, "Incidence of Initiation of Cigarette Smoking--United States, 1965-1996" an alarming number of young people join the ranks of regular smokers each day. This retrospective study estimated that more than 6,000 persons under the age of 18 years try their first cigarette each day (Center for Disease Control (CDC), 1998a). In most longitudinal studies, and as defined by the Center for Disease Control and Prevention, a current smoker is someone who has smoked in the last 30 days. It is also estimated that about 41% of teenage smokers use on a daily basis.

Prevalence by Race and Gender

With regard to race, the national prevalence of past-month smoking indicates that white adolescents were the highest group as compared to Hispanic adolescents. The lowest prevalence has been among black adolescents (USDHHS, 1994). According to the National Health Interview Surveys (NHIS), [1920 through 1980] "Except for 1980, smoking during this 60-year period was more common among white and black adolescent males than among white and black adolescent females" (USDHHS, 1994). The USDHHS (1994) also reported that regardless of gender, whites were more likely to smoke and to smoke more as compared to blacks and Hispanic adolescents. White adolescents are also more likely to use all forms of tobacco than are blacks and Hispanics (USDHHS, 1994). Although it has generally been the case that more males than females smoke, this trend has been changing. The Health and Welfare of Canada (1988) study, as cited by USDHHS (1994) indicated that adolescent females have the highest rate of smoking of any age-gender group in Canada. This is consistent with the USDHHS (1994) report, which indicates that adolescent smoking is rising again since 1991, especially among female adolescents.

Overall, with regard to race and gender, research indicates that white females are particularly at risk, as well as white males, for being tobacco users. It is also important to recognize that smoking among adolescents is on the rise again. According to the Center for Disease Control (1996) report, in 1991, 27.5% of high school students reported being smokers. By 1995, this number increased to 34.8%. Since there has been such concern raised regarding this devastating health problem for our nation's youth, researchers have also examined and tried to identify the factors associated with such behavior.

INFLUENCING FACTORS

Age of Initiation

According to the 1991 National Household Surveys on Drug Abuse, 88% of those who had ever tried smoking reported having tried a cigarette by the age of 18 (USDHHS, 1994). Other data, reported from the Monitoring the Future Project, which included surveys of high school seniors between 1979 and 1992, showed that 31% of the respondents said that they had first tried smoking in sixth grade (USDHHS, 1994). Sixty-one percent said that they had first smoked by eighth grade (USDHHS, 1994). The mean age of first trying a cigarette, according to the National Household Surveys on Drug Abuse, was 14.5 years (USDHHS, 1994). Studies have also demonstrated that there is a positive correlation between age and cigarette smoking among adolescents. In other words, as one gets older the chances of attempting to smoke increases. This is clearly evident in the results from the 1989 Teenage Attitudes and Practices Survey (TAPS) in which 47% of 16 through 18 year olds reported smoking in the last ten days as compared to 11% of 12 and 13 year olds (USDHHS, 1994). In a study by

Ershler, Leventhal, Fleming, & Glynn (1989), the older a student is when he or she begins smoking, the quicker he or she becomes used to smoking. This was more often true for females than males. Within the first year of smoking initiation, Ershler et al. (1989) reported that females were twice as likely to describe being used to smoking as compared to males (29.4%, vs. 16.1%). This trend continued, as indicated by the fourth year, in which 60.8% of the females were acclimated to smoking, compared to only 30.8% of the males.

Several inferences can be drawn from this information. First, that the younger one starts smoking, the more likely it is that she or he will continue. Second, just because one does not smoke when he or she is younger does not mean he or she will not smoke when older. It appears that youth around 14 or 15 are at greatest risk to begin smoking. Lastly, it supports the findings, which indicate that smoking prevalence among females is on the rise.

The Role of Peers

Another influencing factor is the role of peers. This should be no surprise given the importance that peers play

in an adolescent's life. Several studies have examined the role of peers in relation to an individual's smoking intentions. van Roosmalen and McDaniel (1992) studied the social dynamics of adolescents' commitment to smoking, (particularly female adolescents), and were interested in the differences between males' and females' intentions to smoke and the role of peers. Their sample consisted of 1,689 male and female 8th grade students pooled from 42 schools in southern Ontario. They found that students who have friends who smoke are more likely to smoke themselves. Also, females, in comparison to their male counterparts, were less likely to plan on quitting smoking in the next year. The authors explained this finding through the concept of peer bonding. They described how males are more interested in defining themselves as independent and females are more interested in creating and maintaining "friendships based on affiliation and mutuality" (van Roosmalen, & McDaniel, 1992).

Aloise-Young, Graham, and Hansen (1994) examined the process of comparing the susceptibility to peer influence between group outsiders and members who belong to a group. They based their study on the belief that individuals conform in order to win the favor of and gain entrance into

a particular peer group. Previous research of this type has either failed to distinguish between people that individuals desire to have as friends (i.e. group outsiders) and individuals already identified as friends (i.e. group members) or considered only established friendship groups. As a result, Aloise-Young et al. (1994) examined all three of these types of friendships. In their study, unilateral friends were defined as desired friends and reciprocal friends were defined as established friends. Group outsiders were defined as those individuals who did not have any peers reciprocating by listing them as friends. In other words, if person A listed certain peers as friends but those friends did not identify person A as a friend, those peers were considered group outsiders. Regardless, smoking of a best friend influenced teens that did not belong to an established group of peers more than were group members. Moreover, they reported that group outsiders were two times as likely to start smoking if they had a best friend who was a smoker than if he or she was a not a smoker.

Advertising and Teenage Smoking

Another significant factor contributing to smoking among youth has been advertising by tobacco industries. Various studies have demonstrated the relationship between tobacco advertising and smoking among youth. In a study by Goldstein, Fischer, Richards, & Creten, (1987), a dose-response relationship was evident between smoking level and recognition of cigarette advertisement. Among the 306 students grades 9 through 12 who participated, almost 62% of regular smokers were able to identify smoking advertisements, compared to only 33% of nonsmokers. This is not surprising given that cigarettes are one of the most heavily marketed consumer products in the U.S. (Davis, 1987). There are strong indications that the most heavily advertised brands of cigarettes are the ones teenagers report smoking the most. Pierce et al. (1991) evaluated whether or not tobacco advertising targeted young people to encourage them to start smoking. Their conclusion was that it was, and they recommended that cigarette advertising should be banned. Pierce et al. found that nearly 42% of teenagers reported that Marlboro was the most advertised brand of cigarettes and 28.5% named Camel. Camel was named

most often by 12 to 13 year olds as the most advertised brand. These two brands were also the brands of choice by almost 80% of the males and 85% of the females' aged 12 to 17 in this study. Pierce et al. also indicated that Marlboro's market share increased in youths and young adults up to age 24. A similar finding was also present with Camel cigarettes. With both brands, the market share of each tended to decline rapidly with age.

Other Influences

Conrad, Flay, and Hill (1992) reviewed research on smoking initiation among children. Conrad et al. focused on a review of 27 longitudinal studies regarding the onset of cigarette smoking between 1980 and 1992. Two of the 27 studies reviewed examined a broader age range (i.e., starting at age 6) and examined predictors of any level of smoking status. The other 25 studies focused on adolescents between the ages of 10 and 17, with a median age of 12-13. Seventeen of the studies reviewed were conducted within the USA, the remainder came from Britain, Germany, Australia, and the Netherlands. A variable found to be predictive of smoking in one study was not always

found to be predictive in one of the other studies. However, many social learning variables contributed to child/adolescent smoking, including the influence of parental smoking and approval, other adults known by the child/adolescent who smoke and approve or who don't disapprove, smoking and approval by peers, estimates of use by other peers, and the amount of offers/availability (Conrad et al. 1992). Strongest support was observed for sibling smoking and the intrapersonal variable defined as rebelliousness and risk-taking behavior. In later work, Williams and Covington (1997) supported many of the findings originally reported by Conrad et al. Briefly, Williams and Covington found 7th through 12th graders in South Carolina public schools were more likely to currently smoke if they were white, had a greater involvement with peers, less family closeness, had friends and family who smoked, and did not view the consequences of smoking as negative.

Unfortunately, there is no single factor that causes an adolescent to smoke. If there were, prevention and cessation attempts would most likely stand a greater chance of being successful. As evidenced by the research just described, there are several factors associated with

smoking among youth. It is important to point out that these factors, although associated with, are not causal factors to smoking among youth. Creating an awareness of such influencing factors is beneficial if prevention and cessation attempts are to have any chance. In addition to being aware of the influencing factors to tobacco use among youth, it is also important to be familiar with the barriers to youth quitting.

BARRIERS TO QUITTING SMOKING

Quit Attempts

In addition to identifying factors related to why children and adolescents begin smoking, Ershler et al. (1989) also examined the relationship between when a student became a regular smoker and the length of time before a quit attempt occurred. Subjects were gathered from a sixth grade elementary school, two high schools and a middle school, with a final sample totaling 622 participants. Subjects were reportedly representative across ethnicity. This, however, was not detailed beyond black and white students. This brings into question the generalizability of these results to other ethnic classes. Data was collected through the use of interviews and self-report questionnaires. Smoking status was assessed based on student's responses to how many cigarettes per day or week they were smoking at the time of interview. The final categories they used to indicate smoking status were nonsmoker, occasional, or daily. They used a timeline to indicate students' age of initiation (i.e., when they first tried) and when they became regular smokers, which the

authors defined as the age at which respondents became used to cigarettes. Ershler et al. used discrete-time event history analysis to define the duration from which students identified themselves to be regular smokers and their first quit attempt. Results indicated that the older one was when initiating smoking the sooner he or she attempted quitting. Of those 15 years old and older, 74.7 % tried quitting within the first year of getting used to smoking. In those 12 to 14 years of age, only 49.5% attempted to quit within the same time frame. The lowest percentage (35.7%) came from those less than 12 years of age. This supports other reports that the younger one is when smoking is initiated the more likely he or she is to continue smoking.

The other hypothesis addressed in the Ershler, et al. (1989) study was that individuals would be less successful at maintaining their abstinence from smoking if they had a history of smoking at higher levels prior to quitting and had experienced previous failures to quitting. Of the 98 students who reported quit attempts, only 22.4 % remained abstinent 6 months later. It was also reported that 28.6 % returned within 1 week of trying to quit and that 53.1% returned to smoking within one month. Four factors were

identified with successful quit attempts. One was that those who smoked at a lower level of frequency were more successful. A second contributing factor was age of trying to quit. The younger a person was when attempting to quit, the more successful he or she was at remaining abstinent. These two factors may be related to a lower level of tolerance or dependence having developed among such smokers. A third factor involved previous failures at quitting being associated with less success at the most recent quit attempt. Lastly, it was reported that if a person's best friend was a nonsmoker or if less than half of one's friends smoked, there was a greater likelihood that the person would be successfully abstaining six months following a quit attempt.

Smoking and Fear of Weight Gain

Another possible reason many people continue to smoke is to use it as a weight control strategy. Weekley, Klesges, and Reylea (1992) assessed weight control through the use of smoking cigarettes. They also assessed the relative impact of smoking to control weight and dietary restraint on individuals' current smoking status as well as

future intent to quit smoking. They randomly called people in the Memphis, Tennessee area and conducted a telephone interview. The interview involved the administration of several measures. One measure was the Fagerstrom Tolerance Questionnaire, which measures psychological dependence on smoking. Another measure used was the Smoking Situations Questionnaire (SSQ), which is a 6-item questionnaire used to identify specific reasons that subjects may smoke for weight-control. The SSQ was imbedded in the 18-item questionnaire called "Why Do I Smoke?" which assesses smoking behavior. A multiple regression analysis was conducted to identify characteristics of current smokers, with the SSQ representing the predicted variable. From this analysis, Weekley et al. found that weight gain from a prior quit attempt was the best predictor of a high SSQ score. Weekley et al. also found that women, more so than men, were likely to be weight-control smokers if they had gained weight during a prior cessation attempt.

Smoking and Fear of Weight Gain Among Adolescents

Although many studies have examined this issue among the adult population, several have also targeted

adolescents. The majority of these studies demonstrate that there is a positive relationship among weight concern or fear of weight gain and smoking among adolescents. In her study, Charlton (1984) surveyed approximately 16,000 adolescents between the ages of 9 and 19. From this group, Charlton randomly selected a representative sample of students from each age group. Smokers were defined as people smoked at least one cigarette a week. The primary question being analyzed was, "Does smoking keep your weight down?" Possible responses were, yes, no, or don't know. There was a positive correlation between smokers and a "Yes" response. Across all age groups, girls were more likely than boys with the same smoking habits to agree with the belief that smoking controls weight. Another interesting finding was the differences by age. Under 12 years old, students who were "regular" smokers were least likely to agree with the belief that smoking keeps your weight down. At age 12, however, regular smokers were most likely to agree that smoking keeps your weight down. Charlton (1984) pointed out that at age 12, adolescents' perception and concern about weight changes from wanting to grow to not wanting to grow too much. Between the ages of 12 and 16, the percentage of those agreeing steadily

increased in both non-smokers and smokers but especially among the smokers.

Smoking and Fear of Weight Gain According to Race and Gender

Camp, Klesges, & Relyea (1993) found that white girls are much more likely to use smoking to control weight gain. In fact, Camp et al. reported that no black adolescents within their sample of 659 high school students endorsed this belief of using smoking as a weight-control strategy. Of those classified as regular smokers, Camp et al. reported that within their sample, 39% of all female smokers indicated that they had used smoking to control their weight. They also found that those adolescents most likely to smoke in order to control their weight were white, older, girls, and restrained eaters. A limitation to this study, however, is the restrictive sample with regard to racial diversity. Reportedly, the sample was composed of 76% white, 23% black and 1% were classified as other. These results support the findings by Charlton (1984), who found a positive relationship between smokers, especially females, and the belief that smoking controls

weight gain. The study by Charlton, however, did not provide a description of the ethnic classes represented. Therefore, it is difficult to determine if and to what extent there are differences among races.

Weight Concerns and Dieting Behavior

A possible reason that females are at a greater risk for endorsing the belief and practice of smoking, as a weight-control strategy may be that females are more influenced by society's emphasis on being thin than males. As a result, females may tend to diet more than males, and engage in both dangerous and safe food restriction strategies (Klesges, Mizes, & Klesges, 1987). McNeil et al. (1986), who studied the withdrawal symptoms in adolescent smokers, they found that the second most commonly cited withdrawal effect was feeling hungry. Based on this finding, McNeil et al. concluded that fear of putting on weight might deter many young girls from trying to stop smoking. Such a fear is also likely to explain the findings by Klesges et al., who describe that females are much more likely to be actively dieting. Furthermore, females are more likely to report a difference between

their self-reported ideal weight and actual weight. Females often view achieving an ideal weight as important, and are more likely to rate the benefits (i.e., appearance) of achieving ideal weight higher than males.

In a study by French, Perry, Leon, and Fulkerson (1994), 1705 students in grades 7 through 10 were surveyed to examine the relationship between weight concerns and dieting behaviors and smoking behavior. They hypothesized that weight concerns and dieting behaviors would be crossed-sectionally related to smoking and prospectively related to smoking initiation. The authors also believed that they would find this to be true more for girls than for boys. Results demonstrated that adolescent girls who (a) indicated having two or more eating disordered symptoms (b) who had been on a diet in the past year (c) reported a fear of weight gain, and (d) reported a strong wish to be thin were almost twice as likely to be current smokers as compared to girls not indicating such behaviors or concerns. They did not find this to be evident among boys. A limitation to this study was the high percentage of white students. This limits the generalizability to other ethnic populations.

Dieting behaviors were also linked to tobacco use in a study by French, Story, Downes, Resnick, and Blum (1995), who found that dieters were one and a half times more likely to use alcohol or tobacco weekly or daily compared to never dieters. They also found that those who were never dieters reported the most healthy pattern of psychosocial and health behaviors. In comparison, those who dieted 10 or more times or always dieted, reported the most negative pattern of psychosocial and health behaviors.

Smoking and Body Image Dissatisfaction

From the studies just described regarding weight control and dieting, it is evident that smoking is used as a weight control strategy among adolescents. It is also important to recognize that with the desire to control one's weight there is a desire to be thinner or to not gain weight. In addition, the literature on eating pathology describes that the desire to be thinner or to control one's weight is part of a dissatisfaction with one's body image. Given that body image dissatisfaction is an integral part of a person's fear of weight gain and a desire to control one's weight, the studies just described regarding weight

control and dieting imply a dissatisfaction with one's body image. However, although the literature is lacking on describing the role of body image dissatisfaction specifically in relation to smoking behavior, there are a small number of such studies. Wertheim et al. (1992) found that adolescent girls who dieted more were less satisfied with their body characteristics, indicated a larger discrepancy between their current and ideal body sizes, and saw more advantages to being thinner. Wiseman, Turco, Sunday, and Halmi (1998) also found greater body image concerns among smokers than among nonsmokers. In their study of 411 nonclinical adolescent females and 82 adolescent females diagnosed with anorexia nervosa or bulimia nervosa, smokers from both groups indicated significantly greater psychopathology on drive for thinness and body image disturbance.

Smoking Cessation and Prevention

Since there have been such alarming numbers of adolescent smokers reported, various organizations including many governmental agencies have offered their

support for cessation and prevention programs. This attention has also resulted in proposed legislation which would hold tobacco industries financially responsible if the rate of adolescent tobacco use does not significantly decrease in the near future (Sussman, Lichtman, Ritt, & Pallonen, 1999).

In reviewing the literature on smoking cessation, it is clear that the role of friends smoking remains an influencing factor to the success of quitting. Studies have demonstrated that youth who perceive their friends to be smokers are less likely to quit smoking themselves (Sussman, Dent, Severson, Burton, & Flay, 1998). In addition, research indicates that the primary behavioral indicators of not quitting include heavier smoking, intention to continue smoking, and greater perceived stress. Other variables include greater attitudinal tolerance for other drug use, less belief in health as a value, and being white or not Latino (Sussman et al., 1998). Prevalence rates for quitting seem to be lower for adolescents than adults, and adolescents tend to cycle more between cessation and relapse (Sargent, Mott, & Stevens, 1998). Sussman et al. described how most adolescents who smoke, state that they want to quit. The study also cited

that between 55% and 65% of those smokers aged 12 to 18 have tried to quit. Unfortunately, the number of adolescents who actually quit smoking has typically been minimal. In the Sussman et al. study, white adolescents were the least likely to quit smoking compared to other ethnic groups, which is not surprising. White adolescents are consistently identified as comprising the greatest number of smokers compared to any other race. The findings from Sargent et al. also support those of Sussman et al. regarding the variable "definite intent to quit in the future" as a predictor of cessation. This, however, only applied to occasional smokers, which Sargent et al. defined as smoking less than 1 cigarette per day in the last 30 days. The adolescent smoking cessation process may be different from that of adults. Sargent et al. report that most adolescent smokers are occasional or low daily users who are more influenced to smoke by external cues such as peers and social contexts than by internal physical cues. This of course changes as they become heavier users and nicotine dependence takes hold.

In another study by Dozois, Farrow, and Miser (1995), participants were asked to rate situations on a hierarchy of place and time in which they tend to want to smoke. The

top 5 situations were when partying, when worried, when feeling tense, when frustrated, and when feeling uncomfortable. These same participants also rated their motivations for smoking. The top 3 motivations for smoking were 1) to help relax 2) to help cope with boredom, and 3) because of nicotine addiction.

Sussman et al.(1999) conducted one of the most comprehensive reviews evaluating the effectiveness of smoking cessation and prevention studies over the past 25 years. A total of 34 studies were described and evaluated. The authors stated that the 17 cessation studies represented nearly all of the cessation programs published and evaluated between 1975 and 1997. There are many more published studies regarding prevention programs and Sussman et al. decided to include only 17 in order to balance those of the cessation studies being reviewed. One of the findings by Sussman et al. was that the cessation programs typically used a school clinic modality. The most widely used methodological design was single-group. Only 3 of the 17 studies utilized random assignment of subjects and 4 quasi-experimental studies compared cessation rates to a control group. In all of the studies, Caucasian participants made up at least 50% of the total sample. This

low percentage of minority representation was reported by Sussman et al. to be largely attributed to a neglect of reporting such information by the researchers. One of the problems in the research on smoking cessation has been the tremendous variation between programs and the reporting of data. This problem makes it impossible to conduct a meta-analysis of such programs. A meta-analysis would be helpful in being able to identify more precisely what works and what does not. From their review, Sussman et al. suggest that smoking cessation among teenagers might be more accurately viewed as a process involving stages (i.e., regular smoking, to experimental use, to quitting, to maintaining) rather than a process that moves from regular smoking to quitting and trying to maintain. In other words, greater success would be found if smokers decreased their smoking first and then tried to quit versus smoking regularly and then trying to quit.

Among the 17 prevention programs studied, a consensus seemed evident in the theoretical rationale. Programs that were based on social influence theories seem to work the best. This review by Sussman et al. (1999) indicated that the prevention research is strongly advanced compared to the cessation research. This is evident by the advanced

research designs, greater use of biochemical validation, and larger populations. (See Appendix A for a summary of selected studies described in the literature review.)

RATIONALE FOR PRESENT STUDY

It seems that there are as many factors associated with why adolescents begin and continue to smoke, as there are associated with why they don't stop. Such news makes the idea of developing prevention and/or cessation programs seem insurmountable. However, the more information there is available about what contributes to individuals initiating and continuing to smoke as well as what prevents them from quitting, the greater the chances are of overcoming this challenge. In addition to prevention/cessation programs, this information is also valuable for psychologists or health professional treating individuals who smoke. Knowing the contributing factors to smoking and those factors associated with quitting can greatly aid in the development of treatment planning. The purpose of the current study is to further examine the role of eating behaviors and attitudes, as well as body image satisfaction as influencing factors to smoking among adolescents.

Based on the literature reviewed, several points are clear. First, a significant number of adolescents smoke cigarettes. Second, cigarette smoking is associated with numerous health risks. Third, many adolescents use a

variety of methods to avoid weight gain, which makes one question the level of eating pathology present among the adolescent population. Fourth, studies have demonstrated that these three points are related in that some adolescent's smoke, despite the potential adverse effects, in order to avoid weight gain.

There have been several studies that have explored the level of fear individuals have regarding weight gain and the use of smoking. A limitation to many of these studies, however, is the lack of clarity in measuring the use of smoking to avoid or prevent weight gain. For example, Charlton's (1984) study simply asked the question "Do you believe that smoking keeps your weight down?" Charlton also measured smoking status and then described the correlation between these two. This is important to know; however, it does not clearly indicate whether or not an individual is using the appetite suppressant properties of nicotine to avoid gaining weight. Another limitation is the variation among studies in defining a smoker. Within the literature the definition of being a smoker has ranged from smoking a cigarette each day, to one cigarette or more per week, to smoking a cigarette within the past 30 days. Such definitions leave a clear discrepancy among who is

smoking, at what frequency, and to what extent. Certainly, someone who is smoking daily, experiences different levels of dependency, tolerance to nicotine and suppression of appetite than someone who smokes monthly.

RESEARCH QUESTIONS AND HYPOTHESES

The present study was designed to determine the characteristics of a sample of smokers and to answer the following two research questions: (a) To what degree does fear of weight gain, among high school students, predict the severity of smoking behavior and (b) To what degree does body image dissatisfaction, among high school students, predict severity of smoking behavior. The hypotheses being assessed are that both fear of weight gain and body image dissatisfaction will be positively correlated with and predict high school students' smoking behavior as measured by the Fagerstrom Test for Nicotine Dependence (FTND) and specific questions on the Smoking Questionnaire.

METHODOLOGY

Participants

In order to test these hypotheses, a sample of ninth through twelfth grade public high school students were obtained. Students from three different high schools were asked to participate. One high school was located in a rural area of Pennsylvania. A second was from a technical school in a southern rural section of New Jersey. The third high school was a technical school located in an urban section of southern New Jersey. For the purposes of this study, only those students who indicated that they were smokers were included. All students (smokers and non-smokers) were included in another collaborative project. From all three schools there were a total of 65 students who indicated that they currently smoked cigarettes. There were 17 students from ninth grade, 21 from tenth, 16 from eleventh, and 11 from twelfth grade. There were 30 males and 35 females. Of the 65 subjects, 53% were Caucasian and African American students comprised 18.2%. Hispanic students constituted 25.8% and one student was American Indian. The students ranged in age from 14 to 19, with 1.5%

being 14 year olds, 25.8% being 15, 21.2% being 16, 30.3% being 17, 18.2% being 18, and 1.5% being 19. The mean age was 16 and the mean grade was tenth.

Procedure

Each participant was given two forms, an assent form and a consent form, to take home and read over with his or her parent(s). If the student was interested in participating in the study, he or she was instructed to sign the assent form (See Appendix B). Those interested were instructed to review the consent form with their parent(s). A signature from the student's parent(s) or legal guardian(s) indicated their agreement and permission for their son or daughter to participate in the study (See Appendix C). Only those students who returned both forms signed were included in the study; all other students were not permitted to participate. Participants were given 5 self-report measures, which took 15 to 25 minutes for them to complete. Two of the authors from this study explained the directions, in a standardized manner, for each of the measures administered. They also explained that the purpose of the study was to assess the health behaviors and

attitudes of high school students regarding eating and smoking.

Measures

Smoking Questionnaire. This is a 57-item questionnaire to assess the smoking status of each participant and gather demographic information (See Appendix D). Some of the demographic information obtained included age, gender, grade level, height, weight, race, number of siblings living at home and away, as well as number of family members who smoke. A primary objective of this questionnaire was to obtain data on such questions as, how many cigarettes do you smoke a day, previous quit attempts, and, how often have you smoked to control your eating or to control your weight. Other questions assessed quit-attempts and factors contributing to begin smoking again. Most of the questions involve a dichotomous answer. Other questions require a response from a Likert scale.

Fagerstrom Test for Nicotine Dependence (FTND) (Heatherton, Kozlowski, Frecker, & Fagerstrom, 1991). The FTND is a revision of the Fagerstrom Tolerance Questionnaire (See Appendix E). It contains 6 of the

original items, with a revised scoring for two items (time to first cigarette and cigarettes per day). Most researchers have used a score of 6 or greater to indicate dependence. The FTND shows good test retest reliability (5.3 $\pm$ 2.4 on first administration; 5.1 $\pm$ 2.4 on second administration; t [59] = 1.44, NS), with Cronbach's alpha being .64 (Pomerleau, Carton, Lutzke, Flessland, & Pomerleau, 1994).

Mizes Anorectic Cognitions Scale (MAC) (Mizes & Klesges, 1989). This questionnaire assesses three specific cognitive variables based on the conceptualization of anorexia nervosa and bulimia nervosa, as proposed by Garner and Bemis (1982) (Mizes & Christiano, 1995)(See Appendix F). These cognitive variables are: Need for approval of others based on the perception of weight and eating; that self-worth is based on a belief of rigid self-control; and that without rigid weight regulation one will eat uncontrollably and rapidly, resulting in excessive weight gain. Through factor analysis, the MAC has been demonstrated to show support for the presence of all three of these cognitive variables (Mizes & Klesges). The MAC possesses adequate test-retest reliability (Mizes, 1991) and excellent convergent and divergent validity (Mizes &

Klesges). It has been correlated with the severity of eating disordered pathology (Mizes, 1991), and reported self-ideal weight (Mizes & Klesges). The MAC is sensitive to subclinical differences in eating-related behavior and attitudes (Mizes, 1990) and to have good concurrent validity with the Eating Disorder Inventory. There are two forms of the MAC, a 24-item version and a 33-item version. A 41-item version that combines the two forms, omitting duplicate questions and including questions that each version does not include, was administered in this study. This 41-item version is being used as part of another collaborative project. However, for the purposes of the current study, the data analysis will include only the 33-items which make up the 33-item version of the MAC.

Goldfarb Fear of Fat Scale (GFFS)(Goldfarb, Dykens, & Gerrard, 1985). The GFFS is a self-report questionnaire assessing fears related to weight gain (See Appendix G). Each question is rated on a 4-point Likert scale ranging from very untrue to very true. A score of 10 indicates no fear of fat. A score of 40 = extreme fear of fat. It has often been used to assess the severity of eating pathology and can be used to identify individuals at high risk for developing anorexia nervosa or bulimia nervosa.

Body Image Assessment (BIA) (Williamson, Kelley, Davis, Ruggiero, & Blouin, 1985). The BIA involves selecting from nine silhouettes of female body frames (male body frames for male subjects to choose from) (See Appendices H & I). Subjects are asked to pick out their current perceived body size as well as their ideal body size from the silhouettes. The silhouettes range from very thin to obese in incremental steps. The BIA was developed to assess a person's perception of his or her current body size and preferred body size. As the difference between current body size and ideal body size increases, the level of body size dissatisfaction increases. Previous studies have determined that the BIA can differentiate bulimia nervosa and normals in that bulimic subjects will choose a larger current body size and a thinner ideal body size than same-sized normals. This has also been demonstrated true with anorexia nervosa subjects.

RESULTS

Sample Characteristics

Tables 1 through 4 contain the frequency data for the age, grade, gender, and race, respectively, for the 65 high school students included in the current study. The majority of students were tenth graders (32.3%), 17 years of age (30.8%), and Caucasian (53.8%). There were 35 females and 30 males.

Table 1.

Descriptive Data of Student Grade Level

Grade	Frequency	Percent	Cumulative Percent
9	17	26.2	26.2
10	21	32.3	58.5
11	16	24.6	83.1
12	11	16.9	100
Total	65	100.0	

Table 2.

Descriptive Data of Student Ages

Age	Frequency	Percent	Cumulative Percent
14	1	1.5	1.5
15	17	26.2	27.7
16	14	21.5	49.2
17	20	30.8	80.0
18	12	18.5	98.5
19	1	1.5	100.0
Total	65	100.0	

Table 3.

Descriptive Data of Student Gender

Sex	Frequency	Percent	Cumulative Percent
Male	30	46.2	46.2
Female	35	53.8	100.0
Total	65	100.0	

Table 4.

Descriptive Data of Student Race

Race	Frequency	Percent	Cumulative Percent
African American	12	18.5	18.5
Hispanic	17	26.2	44.6
Caucasian	35	53.8	98.5
American Indian	1	1.5	100.0
Total	65	100.0	

Frequency distributions were determined for various demographic data. From the Smoking Questionnaire, frequency distribution data indicated that nearly 62% (40 out of the 65 subjects) had started to smoke cigarettes on at least a weekly basis by the age of 13. Some had started smoking by the age of 10 or younger (12%, or 8 out of the 65). One student reported having started smoking at the age of 5.

Prevalence of Significant Others Who Smoke

Of the 65 subjects, 62% (40 out of 65) indicated that they have at least one sibling who smokes. When this is categorized by siblings that live at home and those that live away, 34% (22 out of 65) of the students reported that they live with one or more brothers and/or sisters who smoke. Another 28% (18 out of 64) indicated that they have at least one sibling who lives away from home and who smokes. With regard to the parents, 81% of the subjects (53 out of 65) reported that they have a mother or father who smoke. Of these 65 students, 43% (28 out of 65), reported having mothers who smoke and 40% (26 out of 65) reported having fathers who smoke. Another significant finding was that 89% of this sample reported that they have at least 1

friend who smokes. In addition, 55% of them indicated that they have at least 6 or more friends who smoke.

Smoking Status of Subjects

A primary goal of this study was to learn about how much adolescent smokers really smoke. In our sample of 65 subjects, 83% (54 of the 65 students) reported that they currently smoke at least one cigarette every day. The other 17% had currently quit smoking and therefore did not report their daily or even weekly smoking intake. Of the 54 students who currently smoke, 57% indicated that they smoke as many as 5 cigarettes a day. The highest number of cigarettes that adolescents reported smoking was 20 or more cigarettes per day. This was reported by five of the students, or 9% of the sample that currently smokes. These data were based on the question, "How many cigarettes do you smoke a day?" on the Smoking Questionnaire, and there is further support based on the findings of the FTND Test. Results from the FTND indicated that 77% smoke 10 or less cigarettes a day and another 21% smoke between 11 and 20 cigarettes per day. A regression analysis was conducted, with the FTND being the dependent variable and cigarettes

per day being the independent variable. The FTND was predicted by the single question, "How many cigarettes a day do you smoke?" with 68% of the variability being accounted for ($r = [+] .824$, $p < .01$). Based on the Smoking Questionnaire, it was discovered that 56% of this sample, or 31 out of the 54 students who currently smoke, reported that they smoke 7 days a week. Most adolescents (50%) reported that they smoke Newport brand cigarettes. The second most reported brand of cigarettes smoked by this sample was Marlboro (20%). About 34% reported smoking some type of light cigarette.

Findings Regarding Quit Attempts

Of 63 subjects who responded, 81% have tried to quit smoking at least once and 15% have tried at least 5 times. Of those who have tried to quit, 15% described feeling a good deal more irritable during such attempts. Thirteen percent said they were a great deal more hungry than usual when they tried to quit. Another 9% indicated that they were a good deal more hungry. We found that 47% (26 of 55) reported a change in their weight when they tried to quit smoking. Of these 26 students, 16, or 61%, reported gaining

at least five pounds during previous quit attempts. Three of these people indicated weight gains of 20 to 50 pounds. However, 10 of these 26 students, or 39%, indicated that they had actually lost anywhere from 1 pound to 10 pounds during previous quit attempts.

Smoking as a Way to Control Eating and Weight Gain

The current study hypothesized that the more fear a person indicated they had about gaining weight, the more likely they were to be a regular smoker. A regular smoker in this study was defined as a person who smokes at least one cigarette per day. One of the ways this hypothesis was tested was by asking the following questions, "How often have you smoked to control your weight?" and "How often have you smoked to control your eating?".

With regard to the first question, 17 of 63 students, or 27%, positively endorsed that they have used smoking as a way to control their eating. These positive responses varied from rarely (19%), to sometimes (3.2%), to often (3.2%), to always (1.6%). Of these 27 students, 70% were female and 30% were male.

With regard to the second question, 10 of 63 students, or 16%, positively indicated that they have used smoking as a way to control their weight. These positive responses varied from rarely (10%), to sometimes (3%), to often (1.6%), to always (1.6%). Of these 10 students, 90% were female and only one was male.

Why Students Resumed Smoking Again After a Previous Quit Attempt

Why do students return to smoking, or why don't they try to stop? A number of possible factors regarding this question were addressed. Results showed that 38% indicated that they started smoking again because of being irritable when they tried to quit. Forty-eight percent started smoking again because of the cravings they had while trying to quit. Only 7.7%, or 4 out of 52, reported that they started smoking again because of eating more after a previous quit attempt. However, 7.7% also indicated that they started smoking again because of having gained weight from a previous quit attempt. Together, there were 15% of the students who indicated that they resumed smoking

cigarettes because of some eating or weight related concern.

Concerns About Future Quit Attempts

Several questions on the Smoking Questionnaire (Bevilacqua, 1999) targeted concerns and worries that adolescents might have regarding deciding to quit smoking in the future. While 8% reported they would be worried a great deal about gaining weight if they quit, 24% indicated that they would be worried a great deal about how they would handle stress without smoking, and 29% indicated that if they were to quit smoking, they would be worried a great deal about being around others who smoke.

Important Factors in Making a Future Decision to Quit

The same factors that were used in assessing the concerns an adolescent would have about making a quit attempt were also used to assess the degree to which these factors would play a role in making a future decision to actually quit. By determining the frequency of responses in

2 categories (it would be a good deal important and it would be a great deal important) the following results were gathered. Thirty-nine percent reported that "Being around others who smoke, which will make me want to smoke" was a good deal or a great deal important in determining future quit attempts. Two factors tied as the second most important. These two were "Not being able to overcome the habit" and "How would you handle stress without smoking". On both items, 17.3% reported that these would be a good deal important and 15.3% reported that they would be a great deal important. Responses to the gaining weight item yielded one person, who indicated that this would be a good deal important, and four others, or 7.6%, who said it would be a great deal important.

The Fagerstrom Test for Nicotine Dependence

Of the 53 students who responded to the question, "How soon after you wake up do you smoke your first cigarette," 15% reported that they smoke within 5 min of waking up. Most of the 53 students, or 42%, reported that they smoke their first cigarette of the day at least 60 min after the time that they wake up. As far as which cigarette they

would hate most to give up, 54 students responded to this question and 23, or 43%, reported that they would most hate to give up the first cigarette of the day.

Level of Nicotine Dependence

To date, there have not been any designated cut-off scores for the FTND, which yields a maximum score of 10. The higher the score, the higher the level of nicotine dependence. Of the 53 students who completed the FTND, 32% obtained a score of 4 or more. The mean score for the FTND was 2.5, with a standard deviation of 2.3. Most of the sample obtained scores of 2 (17%) (see Table 5). Males tended to have higher scores than females. The mean score for males was 3.3, with a standard deviation of 2.49. The mean score for females was 1.9, with a standard deviation of 2.01 (see table 6). On average, males reported smoking 8 cigarettes per day (SD = 8.93), compared to females, who reported smoking on average 4 cigarettes per day (SD = 5.11).

Table 5.

Frequency Distribution of Scores for the FTND

Scores	Frequency	Valid Percent	Cumulative Percent
0	13	24.5	24.5
1	8	15.1	39.6
2	9	17.0	56.6
3	6	11.3	67.9
4	7	13.2	81.1
5	4	7.5	88.7
6	4	7.5	96.2
8	1	1.9	98.1
10	1	1.9	100.0
Total	53	100	

Data from the Goldfarb Fear of Fat Scale

On the GFFS item that described the biggest fear as a fear of becoming fat, 18% responded to the item that their biggest fear is of becoming fat as very true. Another 23% said this is somewhat true. The majority (approximately 49%) said this is very untrue. In response to item 2, "I am afraid to gain even a little weight," 9% indicated this to be very true and 15% indicated this to be somewhat true. Almost 17% said that it is very true and another 10.7% said that it is somewhat true that they believe that there is a real risk that they will become overweight someday.

Although almost 52% reported that it is very untrue that becoming fat would be the worst thing that could happen to them, 15% indicated that this is very true. Another 16.9% indicated that it is somewhat true. All 65 subjects completed the GFFS. The median score for males was 11 as compared to the median score for females of 20. The great majority of males, 93%, obtained scores between10 and 18. One male scored 22 and another male scored 37. The mean score for males on the GFFS was 13 with a standard deviation of 5.45. Scores for females ranged from 10 to 39 with a mean score of 20.54 and a standard deviation of 8.42 (see Tables 6 and 7).

Body Image Assessment Scale

The Body Image Assessment Scale (BIA) was administered to identify those subjects who are dissatisfied with their body image. A discrepancy score was determined by subtracting the ideal body image score from the actual body image score (Pallen, Mizes, & Lohr, 1996). Some of the resulting scores were negative in value, which indicated that those individuals were dissatisfied with their body image but wished to be heavier. Scores of a positive value

Table 6.

t-tests of Males and Females for the FTND, GFFS, BIA, MAC Total, Rigid Weight Subscale, Self-Control Subscale, and Weight Approval Subscale.

Measure	Gender	N	Mean	Std. Deviation	Std. Error of Mean
FTND	Males	23	3.3043	2.4943	.5201
	Females	30	1.9333	2.0160	.3681
GFFS	Males	30	13.3667	5.4550	.9959
	Females	35	20.5429	8.4204	1.4233
BIA	Males	30	.2333	.4302	7.854E-02
	Females	35	.5714	.5021	8.487E-02
MAC Total	Males	29	68.7241	24.2088	4.4955
	Females	35	78.4571	24.4653	4.1354
Rigid weight	Males	30	40.0000	16.2013	2.9579
	Females	35	47.3143	15.5616	2.6304
Self Control	Males	29	12.2414	4.3314	.8043
	Females	35	16.7429	6.6081	1.1170
Weight Approval	Males	30	16.2667	5.7412	1.0482
	Females	35	14.4000	5.0713	.8572

Table 7.

Frequency Distribution of Scores on the GFFS by Gender.

Male Scores	Frequency	Cumulative %	Female Scores	Frequency	Cumulative %
10	9	30.0%	10	7	20.0%
11	7	53.3%	11	2	30.0%
12	4	66.6%	12	--	--
13	1	70.0%	13	1	38.6%
14	2	76.6%	14	1	31.4%
15	1	80.0%	15	1	34.3%
17	1	83.3%	17	2	40.0%
18	3	93.3%	18	2	45.7%
--	--	--	19	1	48.6%
--	--	--	20	1	51.4%
22	1	96.6%	--	--	--
--	--	--	23	3	60.0%
--	--	--	24	1	62.8%
--	--	--	25	3	71.4%
--	--	--	27	2	77.1%
--	--	--	28	2	82.8%
--	--	--	29	1	85.7%
--	--	--	30	1	88.5%
--	--	--	32	1	91.4%
--	--	--	34	2	97.1%
37	1	100.0%	--	--	--
Total	30	--	39	1	100.0%
--	--	--	Total	35	--

Note: The highest possible score on the GFFS is 40. Like the FTND, there are no known cut-off scores for the GFFS. The higher the score, the greater fear of fat.

indicate dissatisfaction with body image and a wish to be thinner. For statistical analysis purposes, these data were dichotomized such that any negative number was assigned a value of zero (0) and any positive number was assigned a value of one (1). Of the 65 subjects, 41.5% received positive discrepancy scores, which indicates that almost 42%, or 27 of the 65 students, reported feeling dissatisfied with their body image and wished to be thinner (see Table 8). Of these 27 students 19, or 70%, were females.

Table 8.

Frequency Distribution of Those Indicating Body Image Dissatisfaction.

Value	Frequency	Valid Percentage	Cumulative Percentage
.00	38	58.5%	58.5%
1.0	27	41.5	100.0
Total	65	100.0	

Note: A value of 0.0 represents those who had no dissatisfaction with their body image or, if they did, they wished to be heavier. A value of 1.0 represents those being dissatisfied with their body image with a wish to be thinner.

Mizes Anorectic Cognitions Scale

The 41-item version of the MAC was administered for purposes of another collaborative project. The 41 items consisted of the MAC 24 and the MAC 33. Any duplicate questions from the two versions were omitted. For the purposes of this study, the responses to the items corresponding to the MAC 33 (Mizes & Klesges, 1989) were assessed. A subject could obtain a score as low as 33 or as high as 165 on the MAC 33. The total scores for the current study ranged from 33 to 132. There is no known cut off score for the MAC to suggest a level of eating disordered pathology. However, the higher the score obtained on the MAC, the higher the level of eating disordered pathology suggested. Over half of the 64 students, (33 or 51.2%) obtained scores of 68 or higher. The mean score for the MAC was 74 in this sample. There were 27 students who obtained a score of 80 or more. Those obtaining scores of 95 or higher made up 22% of the 64 students who completed the MAC (see Figure 1). The average score for females was 78, with a standard deviation of 24.46. The mean score for males was a 68, with a standard deviation of 24.20 (see Table 6).

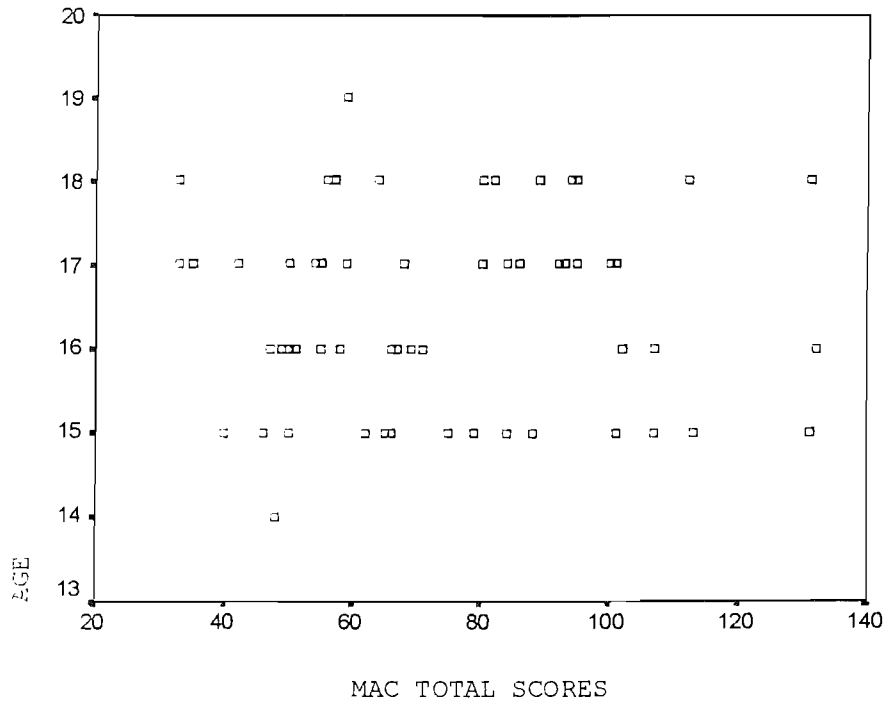

Figure 1. Scatter plot of TOTAL MAC Scores

The three subscale scores of the MAC 33 (Rigid Weight Regulation, Self-Control/Self-Esteem, and Approval and Weight) were also calculated. The highest possible score on the Rigid Weight Regulation Subscale is 100. Three students obtained a score of 86, which was the highest score obtained on this subscale from the current sample. The mean score for the Rigid Weight Regulation subscale for this total sample was 43.9. Just over 50% of the students obtained scores of 40 or above and 17% obtained a score of 60 or above (See Figure 2). For males the mean score was 40 with a standard deviation of 16.20. For females, the mean score was 47.31 on the Rigid Weight Regulation subscale with a standard deviation of 15.56 (see Table 6).

On the Self-Control/Self-Esteem Subscale, the highest possible score is 30. There were four individuals who scored 25 or above. The mean score for this subscale was 14.7 for the total sample. Nearly 50% scored 16 or above (See Figure 3). For males the mean score was 12.24 with a standard deviation of 4.33. For females the mean score was 16.74 with a standard deviation of 6.6 (see Table 6).

On the third subscale, Approval and Weight, the highest possible score is 35. The highest obtained on this subscale from this sample was 27. The mean score for this

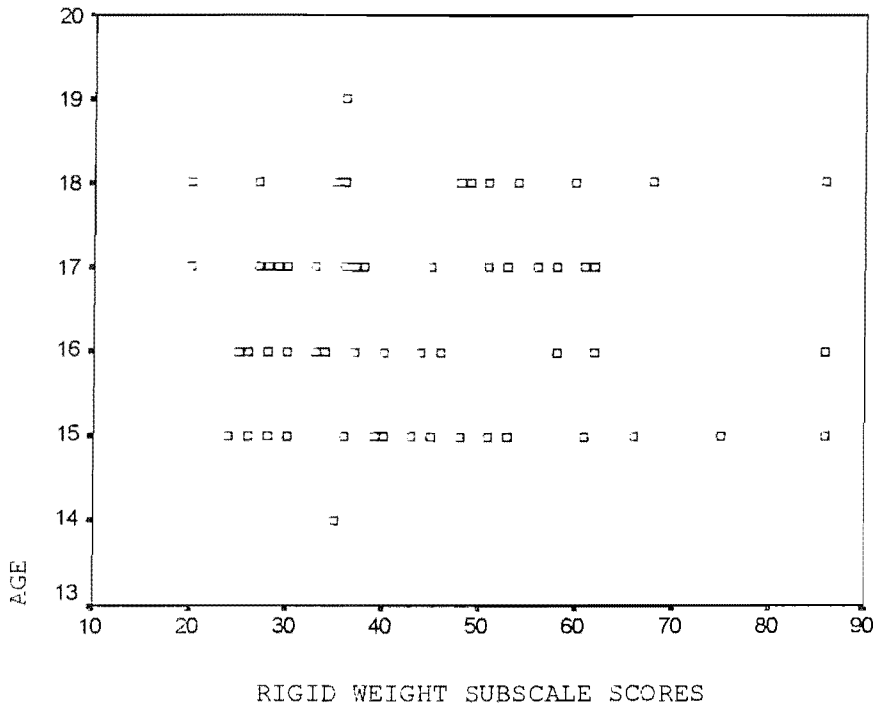

Figure 2. Scatter plot of Rigid Weight Regulation Subscale Scores according to age.

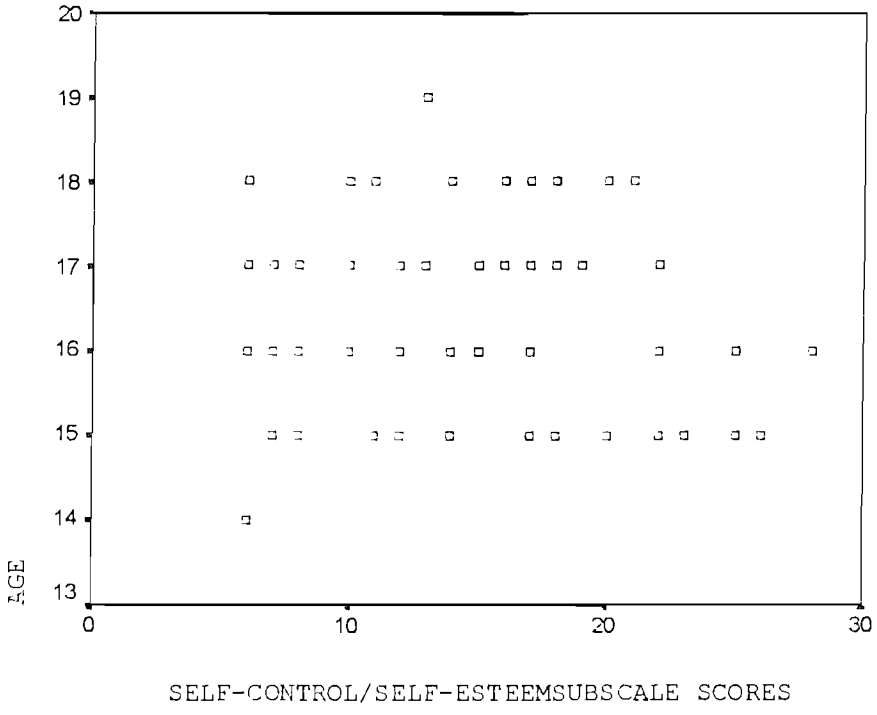

Figure 3. Scatter plot of Self-Control/Self-Esteem Subscale Scores according to age.

subscale was 15.2. Nearly 35% of this sample scored between 17 and 27, with 10% scoring between 23 and 27 (see Figure 4). For males the mean score was 16.26 with a standard deviation of 5.74. For females the mean score was 14.4 with a standard deviation of 5.07 (See Table 6). This is the only subscale score in which the mean for males exceed that of females.

Correlations Between Measures

The GFFS correlated with the MAC Total ($r = .646$, $p < .01$), the Rigid Weight subscale of the MAC ($r = .624$, $p < .01$), the Self-Control/Self-Esteem subscale of the MAC ($r = .681$, $p < .01$), and the Approval and Weight subscale of the MAC ($r = .304$, $p < .05$). The GFFS also correlated with the BIA discrepancy score ($r = .474$, $p < .01$).

The following two questions on the Smoking Questionnaire correlated with the FTND: number of cigarettes smoked per day ($r = .824$, $p < .01$) the number of days per week cigarettes are smoked ($r = .55$, $p < .01$). When responses to the question, "How often do you use smoking to control your eating," were analyzed, it was

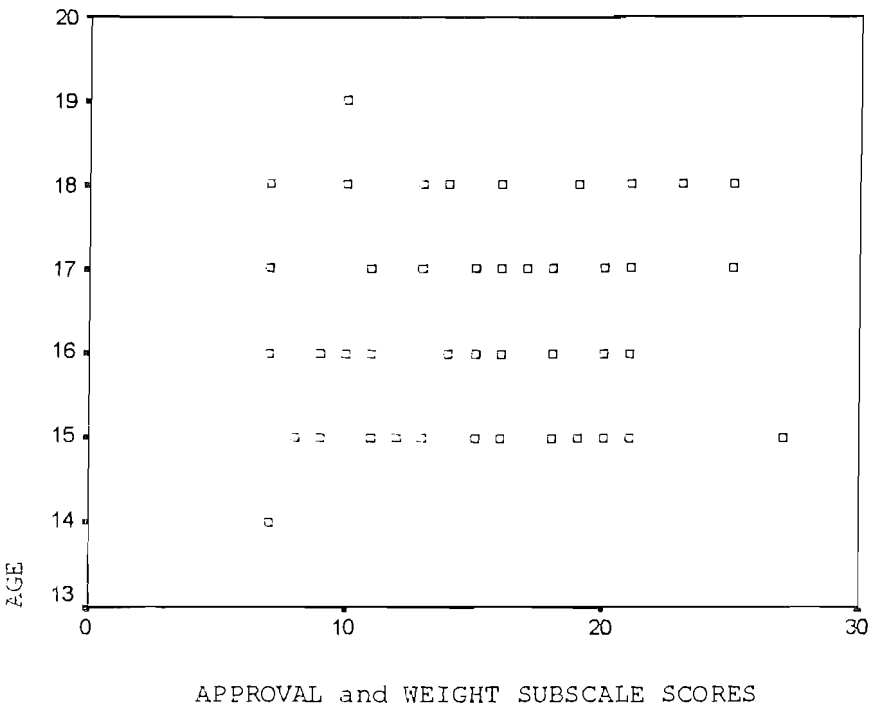

Figure 4. Scatter plot of Approval and Weight Subscale Scores according to age.

Found that 73% reported they never do. However, 27% indicated some form of positive response such as rarely (19%), sometimes (3.2%), often (3.2%), or always (1.6%). This item significantly correlated with the GFFS score ($r = .384$, $p < .01$). This was also correlated with the MAC overall or total score ($r = .250$, $p < .05$), the Rigid Weight Regulation Subscale score ($r = .256$, $p < .05$), and the BIA discrepancy score ($r = .289$, $p < .05$).

Responses to the question, "How often do you smoke to control your weight?" were also analyzed. Of the entire sample, 16% indicated some form of positive response, indicating that they have smoked to control their weight. More specifically, these positive responses included Rarely (10%), Sometimes (3%), Often (1.6%), and Always (1.6%). This response item was found to be significantly correlated with the GFFS score ($r = .547$, $p < .01$), the BIA Scale score ($r = .342$, $p < .01$), and the MAC Total score ($r = .379$, $p < .01$). This was also significantly correlated with all three subscale scores of the MAC: the Rigid Weight Regulation Subscale score ($r = .403$, $p < .01$), the Self-Control of Eating and Self-Esteem Subscale score ($r = .262$, $p < .05$), and with the Appearance, Weight, and Approval Subscale score ($r = .225$, $p < .05$).

Regression Analysis

In completing a linear regression analysis, the single factor which significantly predicted smoking status, or more specifically the number of cigarettes smoked per day, was the Rigid Weight subscale score of the MAC ($r = .244$, $p < .05$). This indicates that 6% of the variability in the number of self-reported cigarettes smoked per day was attributable to differences in scores on the Rigid Weight subscale score of the MAC.

A linear regression analysis also demonstrated that the Approval and Weight subscale score of the MAC predicted the FTND ($r = .245$, $p < .05$). This indicates that 6% of the variability in nicotine dependence, as measured by the FTND, was associated with differences on the Approval and Weight subscale score of the MAC.

DISCUSSION

Few studies that have examined the relationship between the smoking status of adolescents and their concerns about eating and weight. In this study, subjects were pooled from urban and rural areas of New Jersey and Pennsylvania. All were current smokers or individuals who had previously smoked. Given the numerous studies identifying the common characteristics of adolescent smokers it was expected that the characteristics of this sample would closely match.

Comparison of Smokers Based on Current Age and Age of Smoking Initiation

Previous studies have demonstrated that there is a positive correlation between smoking and age and that 80% of adult smokers began prior to the age of 18 (USDHHS, 1994). During 1988-1996 among persons aged 12-17 years, the incidence of initiation of first use increased by 30% and first daily use increased by 50%, 1,226,000 persons aged less than 18 years became daily smokers in 1996 (Center for Disease Control (CDC), 1998a). In the current sample, the

average age was 17 years old and the average age of smoking initiation was 12.9 years old. This is 2.6 years younger than the average age for smoking initiation of 14.5 years old, as reported by the USDHHS (1994) from the National Household Surveys on Drug Abuse. On average this sample has been smoking for four years, despite the fact that 81% who have attempted to quit at least once. Usually smokers attempt to quit 2 to 3 times, or more, before they finally are able to permanently quit. Studies have shown that with each attempt to quit, individuals will become stronger and will have learned more about what helps and what does not. Given that the majority of these adolescents have attempted to quit at least once, one possible interpretation is that each of them is closer to finally quitting once and for all. Another interpretation, given the young age of initiation, is that these individuals will likely continue to smoke as adults. This interpretation is supported by previous research conclusions that the younger one starts smoking the greater likelihood of continuing to smoke (Ershler et al., 1989).

This younger age of initiation may also be reflective of the rise in smoking since 1991. Between 1988 and 1996 the number of adolescents who became daily smokers before

the age of 18 years increased by 73%. This rise from 708,000 in 1988 to 1.226 million adolescent smokers in 1996 is also reflective of the rise from nearly 2,000 to more than 3,000 persons under the age of 18 years who become daily smokers each day (Center for Disease Control (CDC), 1998a).

Another possible explanation for the increase in smoking among teens is the tobacco industry marketing strategies, targeting youth and young adults. For example, in 1992 approximately 50% of adolescent smokers and 25% of adolescent non-smokers between the ages of 12 and 17 reported to have received promotional items from tobacco companies (Center for Disease Control (CDC), 1995). Tobacco industries also tend to use promotions that employ themes and images that appeal to young persons. As a result, adolescents who smoke generally use the most heavily advertised brands, and changes in brand preferences among young persons have been associated with changes in brand-specific advertising expenditures (Center for Disease Control (CDC), 1994). Advertising influences in some ways the beliefs held by youth that smoke. Previous studies have demonstrated that positive or non-negative beliefs regarding the consequences of smoking are yet another

influencing factor for this habit (Williams & Covington, 1997). Based on how comparable the current sample is to the typical profile of an adolescent smoker, it is plausible that the beliefs about the consequences of smoking held by the majority of the current subjects are not negative.

Comparison Based on Race

Another commonality to national findings is that of the racial composition of smokers. In the present sample, over 50% of the participants were Caucasian. This might be explained by the fact that most adolescents who smoke are Caucasian. As reported by the USDHHS (1994), Caucasian adolescents are more likely to smoke and use tobacco of all kinds as compared to all other races. Therefore, most studies could expect to have a larger percentage of this racial group. In the present sample, the distribution among races was fairly representative overall. To account for differences, however, means of each race were compared for the number of cigarettes smoked per day and the FTND score. Results indicated that Caucasians reported smoking the most cigarettes per day and had higher scores on the

FTND on average. (This excludes the results regarding American Indians, given that there was only one individual represented from this race). (See Table 9).

Table 9. Results of Responses to the Question, "How Many Cigarettes a Day Do You Smoke?" and the FTND Score According to Race.

	Cigarettes Per Day			FTND		
Race	Mean	N	S.D.	Mean	N	S.D.
:rican ıerican	5.2500	12	6.1367	3.00	10	2.0548
ıspanic	1.4706	17	1.00731	.6154	13	1.1929
ıucasian	8.4571	35	8.4099	3.1724	29	2.3915
ıerican ıdian	10.000	1	-	4	1	-

In the current sample, the mean number of cigarettes smoked per day for Caucasian adolescents was 8.5. According to the USDHHS report (1994), the average number of cigarettes smoked by Caucasian adolescents was 9 (USDHHS, 1994). African American adolescents in the current sample reported smoking 5.3 cigarettes per day on average. This was slightly less than the average reported by the USDHHS (1994) report of 6 cigarettes per day. The closeness in the average number of cigarettes smoked per day by race

demonstrates how this sample is compatible to national samples.

Comparison Based on Significant Others Who Smoke

When previous studies have examined why adolescents smoke, numerous influencing factors have been identified. One of the factors that has been consistently identified has been smoking by significant others, such as peers, siblings, or parents (Williams & Covington, 1997; Aloise-Young et. al, 1994; Conrad et. al., 1992; and van Roosmalen & McDaniel, 1992). Support for this was replicated in the current study. Sixty-four of the 65 students (98%) indicated that they have friends, siblings, or a parent who smoked.

Comparison Based on Number of Cigarettes Smoked Per Day

According to the Youth Risk Behavior Survey (1991), the majority of adolescents (37.2 % on average) smoke between 2 and 5 cigarettes per day (USDHHS, 1994). Only 4% smoke more than 20 cigarettes per day (USDHHS, 1994). This

is consistent with the findings in the current study in that the majority of current smokers, or 57%, indicated smoking between 1 and 5 cigarettes per day. Nine percent reported smoking 20 or more cigarettes per day.

As described above, the characteristics of smokers from this current sample closely match those of previously published studies. This implies that there is some generalizability to these other samples. The current sample appears compatible with national samples based on both identifying characteristics (i.e., current age and age of smoking initiation; race; associating with, living with, or being related to others who smoke; and number of cigarettes smoked per day) and on smoking behavior.

Relationship Between Smoking and Weight/Body Image Concerns

As borne out in the literature, smoking has been identified as a weight/eating control strategy. Several studies have reported the positive relationship between the belief in smoking as a weight control strategy and smoking status (Camp et al. 1993; Charlton, 1984). For example, in the study by Weekley et al, (1992), of 221 smokers and ex-

smokers, smoking as a means to control one's weight was found to independently predict smoking status. A problem with many of these studies, however, is the variation in the definition of who is defined as a current smoker. Most studies have also avoided directly asking participants the question of whether or not they use smoking as a way to control their weight/eating. Instead many have asked subjects this question much more indirectly. For example, in the famous study by Charlton (1984), subjects were asked whether or not they believe that smoking controls their weight. Whether or not subjects were actually saying that they use smoking to control their weight or whether they just believe that it can be used is unclear. As a result of this ambiguousness, the current study sought more directly to learn the degree to which adolescents who smoke do so to control their weight/eating.

This study hypothesized that those individuals dissatisfied with their body image, particularly if they wish to be thinner, and those concerned about their eating or weight, would be more likely to be regular/daily smokers. When analyses were conducted to evaluate the predictive value of eating and weight concerns on smoking status, several significant findings emerged. First,

approximately 27% (17 of 63 students) of the sample reported that they have smoked to control their eating. This is significant that subjects were not asked if they believe that smoking controls their eating but rather were directly asked if they themselves use smoking to control their eating. No other study, as reviewed by the current author, directly asked study participants this question. One possible extrapolation from this positive endorsement is that these students believe that "If I smoke, I won't be hungry." This, of course, needs to be further evaluated in future studies. However, if this is found to be true, then this creates yet another factor to consider when treating a youth for smoking cessation. This need to control one's eating can be seen in individuals diagnosed with some sort of eating disorder. Although this was a non-clinical sample, several subjects' scores on the MAC suggest possible eating disordered thinking and behaviors. This is supported by the significantly positive correlation found between the responses to smoking to control your eating and the MAC total score ($r = .250$, $p < .05$). Additionally, a significant positive correlation was found between the responses to smoking to control one's eating and the Rigid Weight Regulation subscale score of the MAC ($r = .256$, $p <$

.05). This implies that those individuals who do smoke to control their eating also have a strong need to control their weight. A further implication can be that these individuals fear gaining weight and therefore smoke. This is supported by the positive correlation that was found between smoking to control one's eating and a fear of becoming fat, as measured by the GFFS ($r = .384$, $p < .01$). This indicates that those students who reported they smoke to control their eating have more fear of becoming fat as compared to those who did not indicate that they smoke to control their eating. Approximately 15% of the variability in this fear of becoming fat was found to be attributable to the differences in motivation for smoking. If one is concerned or has a fear of becoming fat it is plausible to hypothesize that one is also dissatisfied with one's body image. When the responses to smoking to control your eating were correlated to the BIA discrepancy score, a significant positive correlation was indicated ($r = .289$, $p < .05$). This finding demonstrates support for the hypothesis that those who smoke to control their eating are also dissatisfied with their body image and wish to be thinner.

A second significant finding is that 16% of this sample endorsed smoking as a way to control their weight.

This item, like that of smoking to control one's eating, was also significantly correlated with the MAC Total score ($r = .379$, $p < .01$), the MAC Rigid Weight Regulation subscale score ($r = .403$, $p < .01$), the GFFS score ($r = .547$, $p < .01$), and the BIA discrepancy score ($r = .342$, $p < .01$). In addition, smoking to control one's weight was correlated with the other two subscale scores of the MAC, the Self-Control and Self-Esteem subscale ($r = .262$, $p < .05$) and the Appearance, Weight, and Approval subscale score ($r = .225$, $p < .05$). These significant findings suggest that part of the reason that these individuals smoke to control their weight is related to eating disordered thinking. More specifically, these individuals have a strong need to rigidly control or restrain themselves from eating and gaining weight, as evidenced by the Rigid Weight Regulation subscale score of the MAC. They believe that to have self-control over their eating and weight is essential to self-worth, as evidenced by the Self-Control and Self-Esteem subscale score, and that weight and eating are essential to how others judge you, as evidenced by the Appearance, Weight and Approval subscale of the MAC. Furthermore, these same individuals have a fear of becoming fat as evidenced by the correlation to the

GFFS. Within this response item, 29% of the variability, which is almost two times that of the response item for smoking to control one's eating, is attributable to the differences in the motivation for smoking. Lastly, with regard to smoking to control one's weight, those who indicated positively were also dissatisfied with their body image and wished to be thinner.

Although this is just one sample, the 65 subjects who participated in the study were pooled from three different high schools in two states (Pennsylvania and New Jersey). If this sample is representative of the estimated 4.5 million adolescents who smoke (USDHHS, 1996), then it is possible that the 27% of this sample who reported one reason for smoking is concern related to weight and/or eating, represent just 1.2 million adolescents who smoke because of concerns regarding eating and/or weight. In addition, of this 27%, 58% (10 of the 17) reported having smoked to control their weight, which implies the belief that "If I smoke, not only will I not be hungry, but, I'll also not gain weight." Furthermore, this may also suggest that of these 1.2 million adolescents, 720,000 may smoke because of a weight-related concern. These two findings alone imply that smoking and eating pathology and body

image concerns, which are two important health concerns that can lead to devastating consequences, can be comorbid problems. These findings suggest that adolescents who have an eating disordered style of thinking may be doing so to control his or her weight or eating habits. Any psychologist or other practitioner treating such an adolescent would benefit by inquiring about that adolescent's beliefs and attitudes about eating and body image.

Two other significant findings were discovered when a regression analysis was conducted. Although this was a correlational study, certain factors were hypothesized to be predictive of smoking status. These predictive factors were level of eating pathology as measured by the MAC and its subscale scores, the GFFS, and body image dissatisfaction as measured by the BIA tool. The findings indicated that two of the subscales of the MAC (Rigid Weight Regulation Subscale and Appearance, Weight, and Approval Subscale) predicted the number of cigarettes smoked per day ($r = .244$, $p < .05$), and the level of nicotine dependence ($r = .245$, $p < .05$), respectively. This is beneficial to know in cases where a person is being screened for eating disorder pathology. By administering

the MAC, a practitioner will be able to predict the number of cigarettes that person smokes per day and his or her level of nicotine dependence or FTND score, by finding his or her Rigid Weight Regulation subscale and Appearance, Weight, and Approval subscale scores, respectively.

One of the important implications of the current study is that whenever a practitioner is treating a youth who smokes or has concerns regarding his or her eating/weight these issues should be considered as possibly being related. Studies have already demonstrated the prevalence of eating disorders and cigarette smoking among adolescents and the negative consequences of these two health problems. Cigarette smoking prevention programs aimed at youth should include questions or inquiries related to eating and/or weight concerns. With regard to smoking cessation programs, inquiries about eating and weight concerns may also be useful. For instance, if a youth is having a difficult time quitting, the issue may have to do with beliefs about gaining weight or becoming fat. The GFFS (Goldfarb et al. 1985) as well as the MAC (Mizes et al. 1989) could be administered. If this youth is like one of the 1.2 million youths estimated to have eating/weight concerns related to

smoking, then these two instruments could identify this and treatment could be planned accordingly.

Although smoking status cannot determine whether or not an individual has an eating disorder, it appears from the current findings, as well as those found by others (Halek, Kerry, Humphrey, Crisp, & Hughes (1993), that smoking has been used as a form of weight/eating control. Given the recent support of this relationship, it is important that assessment tools used for screening eating disorders/pathology include questions about smoking status. Currently, these are not included in most eating disorder screening devices. Adding a few questions such as: "Do you believe that smoking controls your weight?" "How often do you use smoking as a way to control your weight?" "Do you believe that smoking controls your eating?" and "How often do you use smoking as a way to control your eating?" can aid in the assessment process.

It is also apparent from the current sample, as well as previous studies, that females have a greater drive for thinness and are more dissatisfied with their body image than are males. Males who are dissatisfied generally wish to be heavier or bigger (Pallen et al., 1996, Cohn et al., 1987). From the current sample, there were 19 subjects who

reported that they are currently on a diet or trying to lose weight. Of those 19 individuals, 18 were females. They represent 51% of the females in the study. This clearly supports the fact that females are much more likely to be on a diet or trying to lose weight than males. This is most likely influenced by the societal value placed on thinness, especially for females. In addition, of the 27% who indicated that they smoke because of an eating concern, 70% were females. Of the 16% who reported that they smoke because of weight related concerns, 90% were females. These findings support previous research findings that adolescents who are most likely to smoke to control their weight are females (Camp et al. 1993). This suggests that treatment providers and those assessing youth for problems with quitting smoking should be especially aware of the relationship that exists between smoking and weight or eating concerns in females.

CLINICAL IMPLICATIONS

In summary, the findings from the present study suggest several implications for the psychologist or other practitioner working with adolescents in a clinical setting. First, if a psychologist is treating an adolescent who smokes, it would be beneficial to inquire about that adolescent's beliefs and attitudes regarding eating/weight control as well as body image satisfaction. The current study found that over 25% have used smoking as an eating/weight control strategy. If such an inquiry produces any concerns regarding these issues, administration of the MAC, BIA, and GFFS could aid in ruling out or supporting such concerns. If such concerns are supported, then these concerns could be considered when formulating a treatment plan. Second, if the adolescent endorses a goal of wanting to quit smoking, several findings from this study would be important to keep in mind. For example, subjects from the current study reported that quitting would bring up various worries. One worry was how to handle stress. This implies that smoking had been used to handle stress. Treatment would then need to address alternative stress reduction skills such as deep breathing exercises or finding ways to

keep active. A second worry of how to overcome the habit and the cravings is related to the addictive qualities of tobacco/nicotine. A referral to a physician might be in order to evaluate the use of various forms of nicotine replacement treatments (i.e., nicotine patch or nicotine gum). A third concern was what to do when around others who smoke. For the current sample, almost every subject reported having friends and/or family members who smoke. To address this concern a family session or a session in which one or two close friends attend could be used in order to elicit a support network to help the adolescent overcome such trying times. Third, another influence to overcome would be the advertising by tobacco industries, which tend to target youth. To address this, treatment might include teaching the adolescent about distracting techniques and cognitive restructuring.

LIMITATIONS

One of the most noticeable limitations in the present study is the small number of participants. Given that three schools were approached and agreed to participate, a much higher number of respondents was expected. One of the problems that contributed to this low response was the time of year the study was conducted. At the end of May and beginning of June of 1999, students were preparing for finals and completing end-of-the-year projects. Although almost all students verbally expressed an agreement to participate in the study, most of these were not included because they did not return permission forms. Teachers frequently commented that students rarely return such a thing unless it directly affects their grade and even then the response is not always satisfactory. In this study, student participation was purely voluntary and no student was offered any academic reward (i.e., extra school credit) for participating. Perhaps a way to reduce the problem of obtaining permission forms in the future would be to mail the forms to parents of students who sign an assent form and include a self-addressed return envelope. This, however, could be rather costly and, due to limited funds,

could not be pursued in the current study. Teachers were also preparing final exams and grading end-of-the-year projects around this time period. A common response regarding feedback about the study was that it should have been offered in the beginning of the school year rather than the end. Students would be more willing to please teachers by completing the questionnaires and fewer schoolwork pressures would be present for students and teachers alike during the beginning of the school year.

Another limitation has to do with the generalizability of the findings. Since only public schools were included, the findings may not be applicable to private school students. As previously mentioned, the small number of participants also limits the strength of the findings and should be reviewed with this in mind.

A third limitation involves the data collection through student self-report. Many researchers might argue that self-report is subject to inaccuracies in that responses can be inflated or minimized. An alternative approach could have used biochemical procedures to evaluate smoking status and clinical interviews could have been conducted to further support responses given in questionnaires. Biochemical procedures, however, such as

obtaining carbon monoxide (CO) levels, are also questionable. Given that teenagers are prohibited from smoking in school, an accurate CO level would not be guaranteed. The half-life of CO in individuals is subject to variation according to activity level, environmental exposure (i.e., second-hand smoke), as well as use pattern of smoking (Frederiksen, & Martin, 1979). Another biochemical procedure is that of obtaining a cotinine level, the primary metabolite of nicotine. Although cotinine has a much longer half-life than CO, the expense of sample collection precluded it as an option in the current study. Given that participating in clinical interviews would involve a much greater time commitment than just completing the questionnaires, and that parents and teachers would most likely prefer that students spend their time on school work, this approach was not pursued. In contrast to the use of biochemical procedures and clinical interviews, self-report questionnaires were used in the current study. Self-report questionnaires are less intrusive, easily administered, and non-expensive. The researcher was also interested in learning about the perceptions and beliefs that students hold toward smoking. It was felt that the best way to obtain such information

was by using a self-report questionnaire. Despite concerns about self-report questionnaires, they continue to be considered accurate and appropriate for most studies (Patrick et al., 1994).

The fact that this study included smokers only could be viewed as a fourth limitation. Fortunately, this study is part of another project, which does include nonsmokers. The data from that study will be used to evaluate the similarities and differences among these two populations (smokers and nonsmokers).

FUTURE RESEARCH DIRECTIONS AND RECOMMENDATIONS

More than 5 million children living today will die prematurely because of a decision they will make as adolescents---the decision to smoke cigarettes (Center for Disease Control (CDC), 1996). This fact exemplifies why smoking continues to be the leading preventable cause of death in the United States. It is, therefore, imperative that future research studies continue to evaluate all of the contributing factors involved in what starts and keeps adolescents smoking. This current study points out the role that eating and weight concerns play in relation to cigarette use. Future studies need to address the role of adolescent beliefs regarding eating and weight concerns and cigarette use. Given the limitations in the current study, future researchers must pursue continued evaluation of this relationship. Future studies should also, when resources permit, utilize the combination of self-report questionnaires and biochemical assessments, preferably with cotinine plasma (Patrick et al. 1994). Given that adolescents are most easily reached in the school setting, future studies should take into consideration the feedback obtained from this study indicating that administration in

the schools should be done in the beginning of the school year. Also, parental permission forms should be mailed out and include a self-addressed return envelope to ensure greater participation. Current smoking should be defined as smoking cigarettes daily, or the frequency of smoking should be spelled out so that comparison of studies can be more accurate. Questions similar to "Do you believe that smoking controls your weight?" "How often do you use smoking as a way to control your weight?" "Do you believe that smoking controls your eating?" "How often do you use smoking as a way to control your eating?" should be added to smoking questionnaires as well as eating disorder screening assessments as a way to further evaluate the relationship of smoking status and eating/weight concerns among adolescents.

As mentioned briefly in the section on limitations, future studies should include non-smokers to compare the differences and similarities among these two populations. A longitudinal study could track the attitudinal changes as well as the smoking behavior and assess which influences the other. Do attitudinal changes occur first, leading to behavioral changes (i.e., smoking), or vice-versa?

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APPENDIX A

SUMMARY OF SELECTED ARTICLES

Summary of Selected Articles

Authors	Ss Age	Ss Grade	Gender & Number	Measure	Result
Aloise-Young, Graham, Hansen (1994)		7	3027	Questionnaire	Smoking of a best friend and other friends influenced teens that did not belong to an established group of peers more than those who were group members.
Beck, Doyle, and Schachter (1981)			1262	Forced expiratory Flow rates Self-report	Smokers have greater decay and less growth in lung functioning than nonsmokers.
Camp, Klesges, Relyea (1993)		High school	659	Questionnaire	Belief in smoking as a weight control strategy differentiated experimental from regular smokers. White female restrained-eaters were the most likely to use smoking to control weight.
Charlton (1984)	9-19		16,000 equal male and female	Brigantia Smoking Survey	Regular smokers, aged 12 and older, were most likely to agree with the opinion that smoking keeps your weight down.
Conrad, Flay, and Hill (1992)		27 studies reviewed			Many social learning variables contributed to child/adolescent smoking, including the influence of parental smoking & approval, other known adults who smoke & approve or who don't disapprove, smoking & approval by peers, estimates of use by other peers, and the amount of offers/availability. Strongest influence was siblings who smoke.
Dozois, Farrow, Miser (1995)	Avg. age 15.8		M=68 F=9	Questionnaire	The majority of smokers have tried to quit. Nicotine craving was the most commonly reported and most severe withdrawal symptom.

Ershler, Leventhal, Fleming, and Glynn (1989)		6 - 12	622	Self-report and interview	Greater duration of smoking was positively correlated to more adverse side effects to quitting. Lower level smokers were more successful at quitting. Fewer friends smoking correlated to successful quitting.
French, Perry, Leon, and Fulkerson (1994)		7 - 10	M = 828 F = 877	Self-report Restrained Eating Scale BMI	Adolescent girls who indicated having two or more eating disordered symptoms, who had been on a diet in the past year, reported a fear of weight gain and a strong wish to be thin were almost twice as likely to be current smokers.
French, Story, Downes, Resnick, Blum (1995)	2-20	7-12	F=17,135 M=16,528	Self Report	For males and females, frequency of dieting was associated with binge eating behavior, poor body image, and lack of connectedness to others. For females only dieting was associated with more alcohol use and greater tobacco use.
Goldstein, Fischer, Richards, Creten (1987)		9-12	M=146 F=160	Self Report Questionnaire	Regular smokers recognize cigarette advertisements more than non-smokers do.
Halek, Kerry Humphrey, Crisp, Hughes (1993)	11-18		F=1932	Questionnaire, weighed and measured	Smokers were more likely to be moderately overweight and to have been worried about their weight at some time.
Henningfield Clayton, Pollin (1990)					Compared the common attributes of addictive drugs and found that nicotine was as addictive as heroine cocaine, and alcohol.

Henningfield Cohen, and Slade (1991)					The rate of graduation from occasional use to addictive levels of intake is highest for nicotine as compared to heroine, cocaine, and alcohol.
Kandel, Yamaguchi (1993)		12	1108	Self-report questionnaire	Cigarette use plays an important stage prior to the experimentation with other substances. This supports that cigarette use and alcohol use in males is a gateway substance to other illicit drug use.
Kelder, Perry, Klepp, Lytle (1994)		6th annually for 7 years	2376	Self-report	As students started experimenting with smoking they were more likely to begin to be or remain regular smokers. Students who were weekly smokers were unwilling or unable to give up cigarettes at follow up.
Klesges, Mizes, and Klesges (1987)	17 - 40	College	M = 102 F = 102	Self-report on dieting strategies	Females are more likely to be dieting and see a discrepancy between their ideal wt. & real wt. There are also more likely to use smoking as an appetite suppressant.
McNeil, West, Jarvis, Jackson, and Bryant (1986)	11 - 17		F = 116	Smoking Questionnaire Cotinine analysis	Confirmed that teenage smokers experience withdrawal effects when trying to quit smoking.
Pallen, Mizes, and Lohr (1996)		College	M = 227 F = 272	Various body image assessment question-naires	Females judged their ideal body size and weight significantly smaller than current body size & weight. Males selected significantly larger ideal body sizes compared to their current body size.
Pierce, Gilpin, Burns, Whalen, Rosbrook, Shopland, Johnson (1991)			- 24,296 adults - 5040 teens		Cigarette advertising encourages youth to smoke. Younger smokers are especially aware of advertising.

Sargent, Mott, Stevens (1998)	12-18			Survey over 3 years	Intent to quit predicts future cessation among occasional smokers only.
Seely, Zuskin, and Bouhuys (1971)	15-19	High school	(M) 195 (F) 170	Expiratory Flow Rates	Regular smoking for 1-5 years is sufficient to cause demonstrable decreases of lung function.
Sussman, Dent, Severson, Burton, and Flay (1998)	14 - 19		593	Self-report	White adolescents were the least likely to quit smoking. Primary behavioral indicators of not quitting include heavier smoking, intention to continue smoking, and greater perceived stress.
Sussman, Lichtman, Ritt, Pallonen (1999)					Smoking cessation among teenagers might be more accurately viewed as a process involving stages (i.e. regular smoking, to experimental use, to quitting, to maintaining) rather than a process that moves from regular smoking to quitting and trying to maintain. Prevention programs, which tend to be based on social influence theories, seem to work the best.
Tager, Segal, Speizer, Weiss (1988)	5-9		M=979 F=1020	Self Report Questionnaire	The normal adult rate of decline of Forced Expiratory volume (FEV1) begins about two decades earlier in smokers relative to nonsmokers.
Van Roosmalen, and McDaniel (1992)		8th	Males and Females N = 1689	Self report Bogus pipeline Cotinine analysis	Peers significantly influence subject smoking,

Wertheim, Paxton, Maude, Szmukler, Gibbons, Hiller (1991)		High school	F=606 M=315	Various measures of wt loss behaviors, perceived current & ideal body size, body Dissatisfaction, benefits of being thinner and fitter, depression, self-esteem, family relationships	Dieters had a larger discrepancy between ideal and current body size. The primary predictor of weight loss behaviors is a strong desire to be thinner.
Williams, Covington (1997)	12-20	7-12	1826	Multiple Regression Analysis	Students were more likely to currently smoke if: they were white, had a greater involvement with peers, less family closeness, had friends and family who smoked, and did not view the consequences of smoking as negative.
Wiseman, Turco, Sunday, and Halmi (1998)	11-18		All female 411 non-clinical 82 eating disordered	Self-report Eating disorders inventory	Body image concerns were more prevalent in smokers than non-smokers.

APPENDIX B

STUDENT ASSENT FORM

PHILADELPHIA · COLLEGE · OF · OSTEOPATHIC · MEDICINE

DEPARTMENT OF PSYCHOLOGY
215-871-6442
215-871-6458 FAX
psyd@pcom.edu E-MAIL

Philadelphia College of
Osteopathic Medicine
Institutional Review Board
Approval Date: 4/2/99
through Expiration: 4/1/00

March 22, 1999

Student Assent

Today's Date: _____

Student Name: _____ Grade: _____

My name is Louis Bevilacqua and I am completing my doctoral studies in Clinical Psychology at the Philadelphia College of Osteopathic Medicine. I am doing a study, which will look at the relationship among health risk behaviors such as eating problems and smoking.

If you agree to be in the study, you will be asked to fill out five (5) questionnaires that will take about 25 minutes to complete. These questionnaires will ask about frequency and amount of cigarette smoking as well as eating habits and attitudes.

No names will be put on any of the questionnaires. Any information that could identify you WILL NOT be used for this study or for any reports that are written.

If you have any questions regarding the study, please contact me at (610) 280-3911. If you believe that you have suffered injury or illness in the course of this research, you should notify John Simelaro, D.O., Chairperson, PCOM/DVMC Institutional Review Board at (215) 871-6337. A review by a committee will be arranged to determine if your injury or illness is a result of participation in this research. You should also contact Dr. Simelaro if you believe that you have not been adequately informed as to the risks, benefits, alternative procedures, or that you are being pressured to continue in this study against your wishes.

I would really appreciate it if you would help me out, but if for some reason you do not feel comfortable being in the study just let me know. This study is completely voluntary and you may quit at any time.

Please sign your name and check below whether or not you agree to be in the study. Your cooperation in this research is greatly appreciated.

____ Yes, I agree to be in the study
____ No, I do not want to be in the study

I understand the study and the amount of time involved.

_____
Student Signature

APPENDIX C

PARENTAL PERMISSION FORM

PHILADELPHIA · COLLEGE · OF · OSTEOPATHIC · MEDICINE

DEPARTMENT OF PSYCHOLOGY
215-871-6442
215-871-6458 FAX
psyd@pcom.edu E-MAIL

Philadelphia College of Osteopathic Medicine
Institutional Review Board
Approval Date: 4/2/99
through Expiration: 4/1/00

March 22, 1999

Parental Permission Form

Today's Date: _____

Student's Name: _____ Grade: _____

Dear Parent:

My name is Louis Bevilacqua and I am completing my doctoral studies in Clinical Psychology at the Philadelphia College of Osteopathic Medicine. I am doing a study, which will look at the relationship among health risk behaviors such as eating problems and smoking. With your permission, your son/daughter will be asked to complete five (5) self-report questionnaires, which will assess frequency and amount of cigarette smoking as well as eating habits and attitudes. It will take approximately (25) minutes to complete all five questionnaires.

No names will be put on the questionnaires. Your son's/daughter's name and any other information to identify him or her WILL NOT be used for this study or for any reports that are written.

If you have any questions regarding the study, please contact me at (610) 280-3911. If you believe that you have suffered injury or illness in the course of this research, you should notify John Simelaro, D.O., Chairperson, PCOM/DVMC Institutional Review Board at (215) 871-6337. A review by a committee will be arranged to determine if your injury or illness is a result of participation in this research. You should also contact Dr. Simelaro if you believe that you have not been adequately informed as to the risks, benefits, alternative procedures, or that you are being pressured to continue in this study against your wishes.

Please indicate below whether or not your son or daughter has permission to participate in the study. Your cooperation in this research is greatly appreciated.

Sincerely,

Louis Bevilacqua

I ___ **do** give permission to have my child
I ___ **do not** give permission to have my child

participate in the current study. I understand the nature of the study and the amount of time involved.

_____
Parent Signature

APPENDIX D

SMOKING QUESTIONNAIRE

Smoking Questionnaire

Please complete the following questions. Those questions that have multiple choice answers please write in the number of the appropriate answer on the line to the left of the question.

____ 1. What grade are you in?

____ 2. What is your age?

____ 3. What is your height in inches with no shoes? (60 inches = 5 feet)

____ 4. What is your weight?

____ 5. What is your sex? (1) = MALE; (2) = FEMALE

____ 6. What is your race? 1 = African American
2 = Hispanic
3 = Asian
4 = Caucasian
5 = American Indian

____ 7. How many brothers and sisters live at home with you?

____ 8. How many of your brothers and/or sisters who live with you smoke cigarettes?

____ 9. How many brothers and/or sisters do you have who do not live with you?

____ 10. How many brothers and/or sisters who live away from home smoke cigarettes?

____ 11. Do you live with your mother? 1 = YES; 2 = NO

____ 12. How many cigarettes a day does your mother smoke?

____ 13. Do you live with your father? 1 = YES; 2 = NO

____ 14. How many cigarettes a day does your father smoke?

____ 15. How many friends do you have?

____ 16. How many of those friends smoke cigarettes?

____ 17. At what age did you start smoking cigarettes regularly or at least every week?

____ 18. Are you currently using the nicotine patch? 1 = YES 2 = NO

____ 19. How many <u>cigarettes</u> do you smoke a day? (NOT # OF PACKS!!)

____ 20. How many days a week (between 0 and 7 days) do you smoke cigarettes?

If you have <u>never smoked</u> cigarettes, skip to question # 54

Please indicate the type of cigarettes you smoke.

21. Brand name is (Please Print): _____

22. ___ Filter (1) = YES (2) = NO

23. ___ Multifilter (1) = YES (2) = NO

24. ___ 100's (1) = YES (2) = NO

25. ___ 120'S (1) = YES (2) = NO

26. ___ 25'S (1) = YES (2) = NO

27. ___ Lights (1) = YES (2) = NO

28. ___ Milds (1) = YES (2) = NO

29. ___ Full Flavor (1) = YES (2) = NO

30. ___ Menthol (1) =YES (2) = NO

31. ___ Super (1) = YES (2) = NO

____ 32. How many times have you seriously tried to stop smoking cigarettes?

____ 33. During the time you tried to stop smoking, how much did your usual level of being irritable change for you?

1 = No more irritable than usual

2 = a little more irritable than usual

3 = somewhat more irritable than usual

4 = a good deal more irritable than usual

5 = a great deal more irritable than usual

____ 34. During the time you tried to stop smoking, how much did feeling hungry change for you?

1 = No more hungry than usual

2 = a little more hungry than usual

3 = somewhat more hungry than usual

4 = a good deal more hungry than usual

5 = a great deal more hungry than usual

____ 35. During the time you tried to stop smoking, did your weight change?

1 = YES; 2 = NO

____ 36. If you gained weight after quitting smoking cigarettes, how much in pounds did you gain? If you did not gain weight put 0 for this question.

____ 37. If you lost weight after quitting smoking cigarettes, how much weight in pounds did you lose? If you did not lose any weight put 0 for this question.

____ 38. If you did gain OR lose weight after quitting smoking cigarettes, please rate the amount of change in weight you experienced:

1 = a little

2 = some

3 = a good deal

4 = a great deal

Answer questions 39 - 42 if you have ever started smoking cigarettes again after quitting. If you have never quit smoking answer = 99 for questions 39 - 42.

____ 39. Did you start smoking again because you felt irritable?

1 = YES; 2 = NO

____ 40. Did you start smoking again because you had cravings to smoke?

1 = YES; 2 = NO

____ 41. Did you start smoking again because you started eating more?

1 = YES; 2 = NO

____ 42. Did you start smoking again because you gained weight?

1 = YES; 2 = NO

____ 43. Do you plan on trying to quit smoking in the next 6 months?

1 = YES; 2 = NO; 3 = Not a Smoker

Using the scale below, if you would decide to quit smoking cigarettes, how much would you worry about each of the following (items 44-48):

1 = not worried at all

2 = a little worried

3 = somewhat worried

4 = a good deal worried

5 = a great deal worried

____ 44. Worried about experiencing withdrawal symptoms.

____ 45. Worried about not being able to overcome the habit.

____ 46. Worried about gaining weight.

____ 47. Worried about handling stress without smoking.

____ 48. Worried about being around others who smoke, which will make me want to smoke.

Using the scale below, if you did quit smoking cigarettes, how important would each of the factors be in your decision to start smoking again (items 49 -53):

1 = not important at all

2 = a little important

3 = somewhat important

4 = a good deal important

5 = a great deal important

____ 49. Experiencing withdrawal symptoms.

____ 50. Not being able to overcome the habit.

____ 51. Gaining weight.

____ 52. How you would handle stress without smoking.

____ 53. Being around others who smoke, which will make me want to smoke.

____ 54. How often have you smoked to control your eating?

1 = Never 2 = Rarely 3 = Sometimes 4 = Often 5 = Always

____ 55. How often have you smoked to control your weight?

1 = Never 2 = Rarely 3 = Sometimes 4 = Often 5 = Always

____ 56. Are you currently on a diet, or trying to lose weight?

1 = YES; 2 = NO

____ 57. Are you currently trying to gain weight?

1 = YES; 2 = NO

APPENDIX E

FAGERSTROM TEST FOR NICOTINE DEPENDENCE

Fagerstrom Test For Nicotine Dependence

Please complete the following questions.

1. How soon after you wake up do you smoke your first cigarette?
   - ____ within 5 minutes
   - ____ 6-30 minutes
   - ____ 31-60 minutes
   - ____ After 60 minutes

2. Do you find it difficult to refrain from smoking in places where it is forbidden e.g. church, library, movie theater, school, etc.?
   - ____ Yes
   - ____ No

3. Which cigarette would hate most to give up?
   - The first one in the ____ morning
   - ____ All others

4. How many cigarettes a day do you smoke?
   - ____ 10 or less
   - ____ 11-20
   - ____ 21-30
   - ____ 31 or more

5. Do you smoke more frequently during the first hours after waking than during the rest of the day?
   - ____ Yes
   - ____ No

6. Do you smoke if you are so ill that you are in bed most of the day?
   - ____ Yes
   - ____ No

APPENDIX F

MIZES ANORECTIC COGNITIONS SCALE

MAC Questionnaire

Name:_____

Date: _____

This is an inventory of beliefs and attitudes about eating and weight. There are a number of statements with which you may tend to agree or disagree. On your answer sheet there is one of five possible answers for each item. For each statement, you should circle one of the numbers, according to your own reaction to the item:

Circle over #1 if you STRONGLY DISAGREE (for example 1 2 3 4 5)
Circle over #2 if you MODERATELY DISAGREE
Circle over #3 if you NEITHER AGREE NOR DISAGREE
Circle over #4 if you MODERATELY AGREE
Circle over #5 if you STRONGLY AGREE

It is not necessary to think over any item very long. Mark your answer quickly and go on to the next statement.

Be sure to mark how you actually feel about the statement, not how you think you should feel.

Try to avoid the neutral or "3" response as much as possible. Select this answer only if you cannot decide whether you tend to agree or disagree with a statement.

		SD	MD	N	MA	SA
1.	I feel victorious over my hunger when I am able to refuse sweets.....	1	2	3	4	5
2.	No matter how much I weigh, fats, sweets, breads and cereals are bad food because they always turn into fat.....	1	2	3	4	5
3.	No one likes fat people; therefore, I must remain thin to be liked by others.....	1	2	3	4	5
4.	I am proud of myself when I control my urge to eat.....	1	2	3	4	5
5.	When I eat desserts, I get fat. Therefore, I must never eat desserts so I won't be fat.....	1	2	3	4	5

6.	How much I weigh has little to do with how popular I am.....	1	2	3	4	5
7.	If I don't establish a daily routine, everything will be chaotic and I won't accomplish anything.....	1	2	3	4	5
8.	My friends will like me regardless of how much I weigh.....	1	2	3	4	5
9.	When I am overweight, I am not happy with my appearance. Gaining weight will take away the happiness I have with myself.....	1	2	3	4	5
10.	People like you because of your personality, not whether you are overweight or not.....	1	2	3	4	5
11.	When I eat something fattening, it doesn't bother me that I have temporarily let myself eat something that I'm not supposed to.....	1	2	3	4	5
12.	If I eat a sweet, it will be converted instantly into stomach fat.....	1	2	3	4	5
13	If my weight goes up, my self-esteem goes down..	1	2	3	4	5
14.	I can't enjoy anything because it will be taken away.....	1	2	3	4	5
15.	It is more important to be a good person than it is to be thin.....	1	2	3	4	5
16.	When I see someone who is overweight, I worry that I will be like him/her.....	1	2	3	4	5
17.	All members of the opposite sex want a mate who has a perfect, thin body.....	1	2	3	4	5
18.	Having a second serving of a high calorie food I really like doesn't make me feel guilty.....	1	2	3	4	5
19.	If I can cut out all carbohydrates, I will never be fat.....	1	2	3	4	5
20.	When I overeat, it has no effect on whether or not I feel like a strong person.....	1	2	3	4	5

21.	Members of the opposite sex are more interested in "who" you are rather than whether or not you are thin.....	1	2	3	4	5
22.	If I gain one pound, I'll go on and gain a hundred pounds, so I must keep precise control of my weight, food, and exercise.....	1	2	3	4	5
23.	I rarely criticize myself if I have let my weight go up a few pounds.....	1	2	3	4	5
24	I try to attract members of the opposite sex through my personality rather than by being thin.....	1	2	3	4	5
25.	If I don't have a specific routine for my daily eating, I'll lose all control and I'll gain weight.....	1	2	3	4	5
26.	If others comment on my weight gain, I won't be able to stand it.....	1	2	3	4	5
27.	I feel superior to fat people when they are eating and I am not.....	1	2	3	4	5
28.	When I feel very hungry, I can't give in to that hunger. If I do I'll never stop eating and I'll soon be fat.....	1	2	3	4	5
29.	If my weight goes up a couple of pounds, I don't worry about it. It's probably just temporary (due to water retention, for example), and eventually my weight will return to normal.....	1	2	3	4	5
30.	When people whisper and laugh so that I cannot hear what they are saying, they are probably saying that I look unattractive. Their laughing and whispering indicates that I have gained weight.....	1	2	3	4	5
31.	If I've gained two pounds, I can't wear shorts anymore.....	1	2	3	4	5
32.	How much I weigh has little effect on how happy I am generally.....	1	2	3	4	5

33.	It's entirely normal and OK for my weight to go up and down a few pounds.....	1	2	3	4	5
34.	If I can just control my eating, I can control my life.....	1	2	3	4	5
35.	I feel guilty when I have eaten foods that I shouldn't and exercising makes the guilt go away.....	1	2	3	4	5
36.	My ability to deny myself food demonstrates that I am better than other people.....	1	2	3	4	5
37.	I am embarrassed when other people see me eat...	1	2	3	4	5
38.	Just because I can diet and control my hunger, it doesn't make me a better person than those who can't.....	1	2	3	4	5
39.	Gaining five pounds would push me over the brink	1	2	3	4	5
40.	When I am hungry, I know that I will eventually stop eating because I'll eventually get full and feel satisfied.....	1	2	3	4	5
41.	If I'm not in complete control, I lose all control.....	1	2	3	4	5

APPENDIX G

GOLDFARB FEAR OF FAT SCALE

Goldfarb Feat of Fat Scale

Please read each of the following statements and select the number which best represents your feelings and beliefs.

1 = very true 2 = somewhat untrue 3 = somewhat true 4 = very true

___ 1. My biggest fear is of becoming fat.

___ 2. I am afraid to gain even a little weight.

___ 3. I believe that there is a real risk that I will become overweight someday.

___ 4. I don't understand how overweight people can live with themselves.

___ 5. Becoming fat would be the worst thing that could happen to me.

___ 6. If I stopped concentrating on controlling my weight, chances are that I would become very fat.

___ 7. There is nothing that I can do to make the thought of gaining weight less painful and frightening.

___ 8. I feel like all my energy goes into controlling my weight.

___ 9. If I eat even a little, I may lose control and not stop eating.

___ 10. Staying hungry is the only way I can guard against losing control and becoming fat.

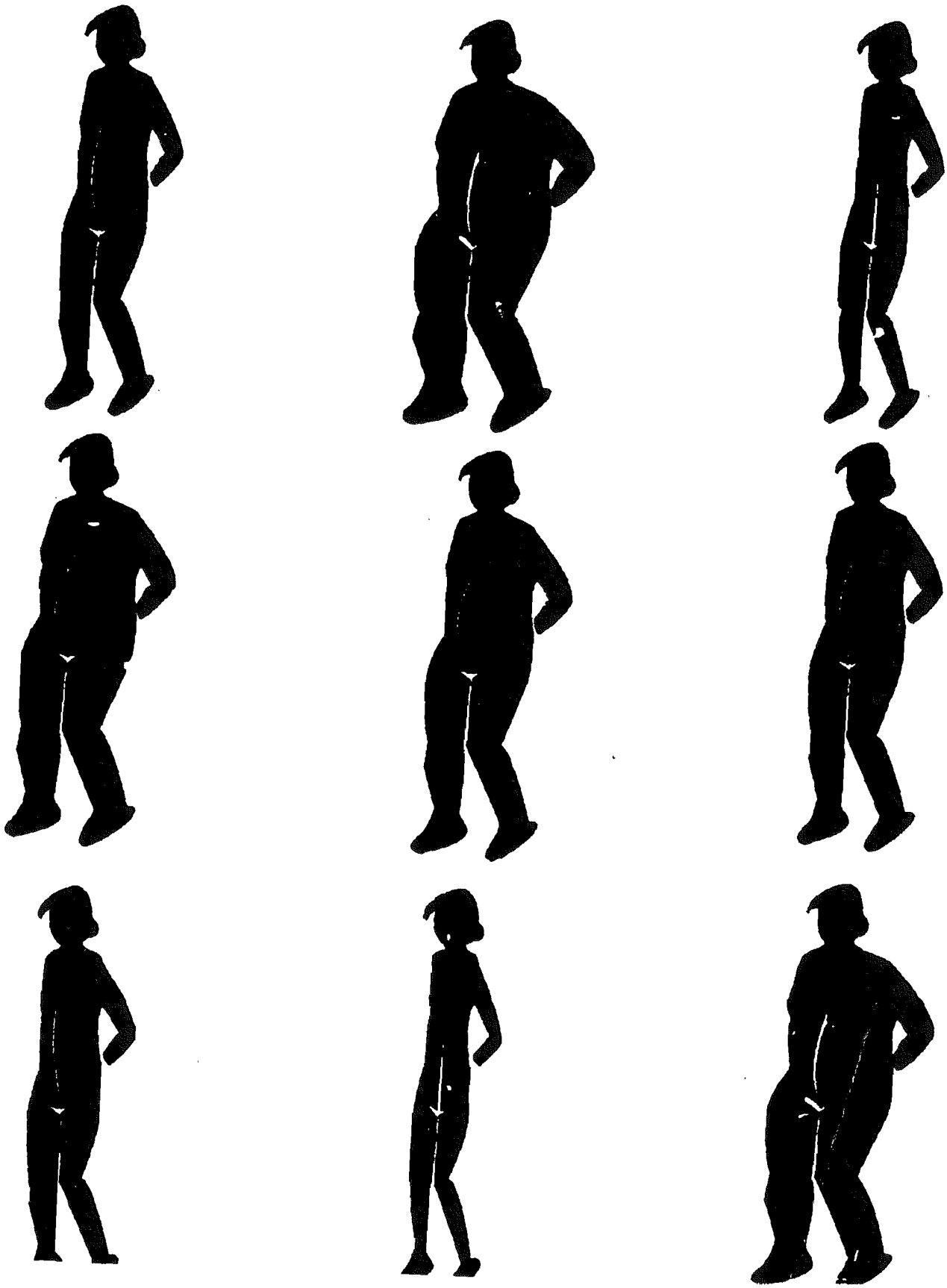
APPENDIX H

BODY IMAGE ASSESSMENT

FEMALE VERSION

Look carefully at each of the figures below. Select the one that best represents your actual body type, that is, the one that you actually are now.

Look carefully at each of the figures below. Select the one that best represents your ideal body type, that is, the one that you would like to be.



APPENDIX I

BODY IMAGE ASSESSMENT

MALE VERSION

Look carefully at each of the figures below. Select the one that best represents your ideal body type, that is, the one that you would like to be.









Look carefully at each of the figures below. Select the one that best represents your actual body type, that is, the one that you actually are now.